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of the

Royal Naval Medical Service.

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EDITED (JANUARY–APRIL) BY

FLEET SURGEON R. C. MUNDAY, R.N. AND

FLEET SURGEON W. L. MARTIN, F.R.C.S., R.N.

EDITED (JULY–OCTOBER) BY

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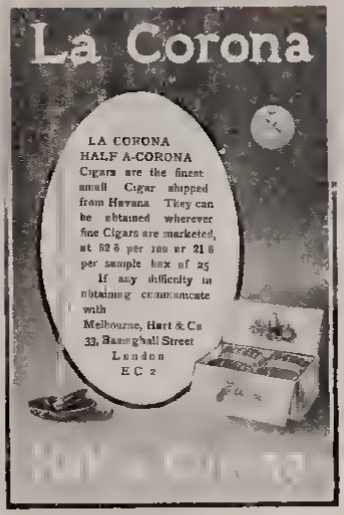

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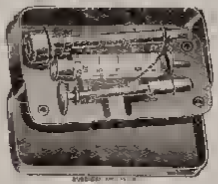

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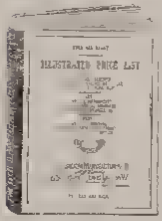

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Journal

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Original Articles.

THE RÔLE OF THE LEUCOCYTE IN LOCAL AND GENERAL INFECTIONS

By Fleet Surgeon S. Leffert
Royal Marines Flagship

Received for publication Oct. 15, 1908

Part I. On the Principles of Evaluating the Emigration of the Leucocyte by Decalcifying the Blood and Reconstructing the Coagulum with Special Reference to Estimating the Value of Reagents used in the Treatment of Wounds.

THE phagocytic activity of the leucocyte was first pointed out by Metchnikoff. Leishman demonstrated this in the human blood and Wright and Douglas elaborated the process into a scientific one whereby we have the opsonic action of the blood as one of the factors of immunity. Wright's further discovery of the emigration of the leucocyte upon the scattling of the fibrinous elements of the clot will add another page in the study of immunity as well as having a special application to the present important study of wound treatment.

Further elucidation of this phenomenon being called for an investigation into the emigration of the leucocyte resulting from the use of decalcified blood was undertaken.

By a process of superimposing artificial coagulating plasma upon centrifugalized corpuscles it is possible to obtain emigration of an active nature and standardization of results may be arrived at by comparing the stimulating effects of various reagents.

[illegible] MATERIAL [illegible]

[illegible] by pumping [illegible] [illegible] its position between [illegible] the action of varied viscosity in specimens [illegible] the coagulating plasma upon the corpuscular [illegible] of which facilitates the process

[illegible] with an equal volume of normal saline placed [illegible] This results in the formation of a white [illegible] is a supernatant fluid of low viscosity Sim-

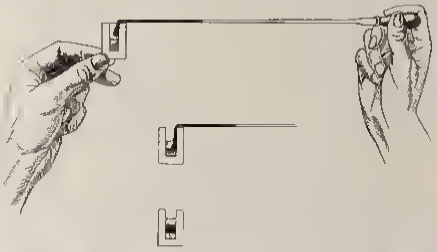


DIAGRAM I.—Method of [illegible] material upon the corpuscular layer [illegible] The second figure [illegible] shows the [illegible] The third figure [illegible] the marbled cell wheel [illegible]

[illegible] of citrated plasma and calcium chloride are mixed and [illegible] coagulating [illegible] in the cell as shown in Diagram I The plasma becomes more viscous as the process of coagulation takes place [illegible] displaces the supernatant fluid above the leucocytic line [illegible] intimate contact with the same It is expedient to remove [illegible] the supernatant fluid with a capillary pipette and moisten the end [illegible] This will prevent the formation of the blob [illegible] by the artist in the top figure of Diagram I, and cause the plasma to run evenly down the end of the cell

[illegible] Simpson, R M L I, has kindly illustrated the process for

[illegible] figure represents the [illegible] of the super[illegible] plasma. The [illegible] the completed [illegible] top with paraffin w[illegible] [illegible]ated.

In [illegible] cases the [illegible] becomes [illegible] coagulated corpuscles be used without the admixture of citrated plasma only a very thin leucocytic line is attached to the white clot.

Occasional errors in technique have given opportunity to study the structure of the white leucocytic line. It has coagulated without implication of the other corpuscles and previous to the application of the coagulating plasma, and in one case in particular this was displaced and surrounded with white clot so that the degrees of emigration from the upper surface from the lower surface and also from the total corpuscular surface could be estimated. The upper surface of the white line gave rise to excessive emigration; the under surface represented about a quarter of this, while the top layer of the red clot only showed discrete leucocytic movement.

The admixture of reagents with the white clot is naturally limited owing to the necessity of retaining a highly viscous fluid for displacing purposes. In the present paper normal saline is used as the diluent of the corpuscular elements, and experimentation shows that the smaller the amount of citrated plasma in the mixture the greater is the emigration from the corpuscular line.

(2) Method of Preparing Citrated Blood.

Citrate salts are the best decalcifying agents for the purpose in view. Citrate of lithium may be used as an alternative to the sodium salt but the latter is employed in all the experiments recorded in this paper. The following experiment demonstrates the concentrations of citrate of sodium to use when a dilution of 1 in 20 of blood is employed. It is advisable to keep the citrated plasma as concentrated as possible.

Percentage of citrate used	Total content of the salt	Length of clot accounted by emigration
(1) 4 per cent. citrate of sodium	0·2 per cent.	$\frac{4\cdot5}{5}$ 0·9 mm.
(2) 6 "	0·3 "	$\frac{4\cdot2}{5}$ 0·8 "
(3) 8 "	0·4 "	$\frac{3}{5}$ 0·6 "
(4) 16 "	0·8 "	$\frac{5}{5}$ 1·0 "
(5) 32 "	1·6 "	$\frac{5\cdot5}{5}$ 1·1 "

The above experiment was [illegible] that its coagulability and [illegible] that the [illegible] the salt will decalcify [illegible]

As shown later citrate [illegible] of the leucocytes [illegible] stimulates its migration [illegible] minor degree when left [illegible] laboratory bench The technique of the preparation of citrated [illegible] important and it is necessary to enter into some of the idio- [illegible] the chemical and physiological action of this salt in relation [illegible] coagulation of the blood

If citrate of sodium be added to blood and centrifugalized a pre- [illegible] will be seen lying upon the corpuscular line The same added [illegible] solution of chloride of calcium produces no apparent chemical [illegible]

(2) If a [illegible] solution of citrate of sodium containing a modicum of calcium chloride be added to blood and intimately mixed a citrated blood is obtained which coagulates on the further addition of lime If we estimate the coagulability of this so called citrated blood it will be found to fluctuate during the next four hours showing the complexity of the chemical change

(3) If a modicum only of citrate be added to blood it will coagulate [illegible] more citrate break up the clot coagulation again takes place This may go on repeatedly until a mixture of citrated plasma and citrated serum [illegible] obtained or the product be a mixture of citrated serum and serum Citrated plasma and serum are incompatible

Coagulated blood may be turned into citrated serum and corpuscles by incubating for one hour with the same amount of citrate that de- coagulates fresh blood These observations explain some of the difficulties [illegible] obtaining citrated blood of low chemical content

The following experiment may indicate the advisability of drawing [illegible] blood from the vein but this procedure is not necessary if ordinary [illegible] precautions be taken

Experiment Calibrate four small test tubes place therein the amount of [illegible] that will just decalcify the blood and draw the blood leisurely from the [illegible] incision Even after mixing intimately by shaking, the last one or two tubes will coagulate owing to preliminary stages of coagulation having commenced before admixture of citrate

Sir Almroth Wright recognized the importance of intimately mixing blood and citrate when he adopted the pipette in place of drawing the blood directly into a capsule

Technique for obtaining Citrated Blood of Low Chemical Content

Time enters into the composition of glass and consequently a well [illegible] test tube is more suitable for the purpose in view than a tube [illegible] The small thin test tube (2 in by ½ in) is specially adapt

This is it facilitates by reason of its thin structure the [illegible] of blood from the digits.

The tube is charged by running 100 c.c. [illegible] into it, rinsing with [illegible] and after cleaning [illegible] 8 per cent. of citrate of sodium are placed therein. The [illegible] under the dorsal aspect of the thumb but to the side nearest the operator. Blood is run into the test tube up to the 100 volume mark. The contents are then shaken until a froth appears, either by using the thumb or suitable stopper applied to the orifice. If citrated plasma alone be required the nearer the coagulation point the better, and, should slight coagulation take place, all that is necessary is to loosen the clot at the sides of the vessel and centrifugalize when a clear citrated plasma especially suitable for all purposes is obtained.

(4) The White Clot: its Purpose and Formation

(a) Is a medium for indicating coagulation resulting from previous Application of Reagents.

One volume of 1 per cent. solution of calcium chloride mixed with five volumes of the standard citrated plasma produces a satisfactory coagulum for this purpose. The citrated plasma should be previously centrifugalized perfectly clear of all lime deposits which simplifies the subsequent observations of the coagulation and renders the clotting material practically free of chemical reagents.

If excess of citrate be added coagulation does not take place and the following experiment demonstrates the small effect of altering the lime content of the white clot.

Experiment. Citrated bloods drawn from the same patient with a total salt content of 0·8 per cent. and 0·3 per cent. respectively were mixed with one third volume of normal saline, placed in cells and centrifugalized. Five volumes of citrated plasma were mixed with one volume of the following percentage of lime —

(A) Blood with 0·8 per cent. citrate of sodium (total content).

Percentage of lime	Extent of coagulation in min.
16 per cent. calcium chloride	Nil, no coagulation
8	1 1/5 0·22 min.
4	3·0/1 0·6
2	2·7/5 0·55

(B) Blood with 0·3 per cent. citrate of sodium (total content).

Percentage of lime	Extent of coagulation in min.
4 per cent. calcium chloride	3/5 0·6 min.
2	3·75 0·75
1	4/5 0·8
0·5	4·0 0·8

Excess of lime does not appear to influence the result when citrated blood of low chemical content is used. A great excess of lime prevents

[illegible] In [illegible] in the [illegible] on of [illegible]

Is a Medium [illegible] and Buffer of Reagents

[illegible] the viscous fluid [illegible] the [illegible] of [illegible] layer [illegible] the white clot As seen [illegible] of concentrated [illegible] citrated plasma

(A) Fixing the [illegible] —This does not come within the scope of the present paper but may be carried out either by (1) Wright's natural method (2) on the lines discussed in Part II or (3) by the use of coagulated corpuscles

(B) Testing the Nature of the Leucocyte after Decalcification —Colonies of an organism (? from citrate solution) growing in the white clot led to the following experimentation to ascertain if sterile precautions were necessary in carrying out this work —

Bacterial emulsions of the above organisms and a pathogenic staphylococcus were made and mixed with the white clot in as concentrated a state as possible Cells were prepared with citrated blood and salt solution centrifugalized as —

Cell 1	White clot with normal saline	1 to 5	0 3	M C
Cell 2	— staphylococcal emulsion	1 to 5	0 3	M C
Cell 3	— bacterial emulsion	1 to 5	0 3	M C

Neither of the bacterial emulsions influence the emigration except that perhaps a slight increase in the density may result

(5) THE CLARITY OF THE WHITE CLOT

The accuracy and simplicity of the process depend upon this factor The methods recommended in this paper are more practical than Wright's natural method by reason of obtaining a clear field for observation—in a fresh specimen of the migratory activity of the leucocyte

In the majority of cases if the citrated blood is well centrifugalised directly after drawing with the citrate, a clear citrated plasma is obtained In the event of this not occurring the addition of a medium of coagulating material past its first stage will assist the clarification (See p 3 Heading 2) Post prandial periods should be avoided especially if a large amount of fat has been ingested but this only results in partial cloudiness

(6) METHOD OF ENUMERATION OF THE EMIGRANTS—MIGRATORY COUNT (M C)

(1) *Measurement of the Length of the Clot Occupied*

This in many cases gives sufficient differentiation for recording results and is enumerated as follows —

1 to Reading by ocular micrometer

1 Correction of the above — 0 1 Actual measurement in millimetres

[illegible]

[illegible]—Mic[illegible] [illegible]ide that [illegible] ruled o[illegible]de by [illegible]

It m[illegible] the ex[illegible] clear fi[illegible] [illegible]ary microsco[illegible] if the Thoma [illegible]

(2) St[illegible] [illegible] pencil is mil[illegible] [illegible] tube and gently wiped A [illegible] microscopical adaptations In squaring [illegible] bring the centre half of each side of the sq[illegible] on Care should be taken that the pin hole [illegible] and thin metal is best for this purpose

[illegible] *Migration*

By using [illegible] ly standard in the normal leucocytosis [illegible] will give us twenty leucocytes within an area [illegible] in a counting chamber (1/10 mm) If we keep to our standard [illegible] incubation (two hours) we avoid the [illegible] advancing line of emigration which is such a conspicuous factor in long incubated specimens In the event of this occurring in slight degree it is a simple matter to make the necessary allowance in estimating the length of clot occupied One of the principal reasons for recording the density of emigration is that variation may take place in the same series of experiments Thus in one experiment the difference in the emigration before and after incubation was patent to the naked eye (when the specimens were held up to the light) and subsequent counting of the stained specimen showed 2 100 and 1 000 per cubic millimetre respectively

The following method of enumeration is adopted when estimation is made by the naked eye or slight microscopical examination 2 5 [illegible] 1 2 5 [illegible] 0 5 (2) 2 5 [illegible] 0 1 (3) &c The figures in brackets represent the estimated thousand of leucocytes that would occupy 1 c mm of clot and need not be accurate in the original estimation provided the varying densities either above or below it are recorded in these stages

(a) *Method of Counting an Unstained Specimen* —Success in this method depends on the clarity of the original extracted plasma It is carried out by using low magnification and a pin-hole diaphragm (ocular) of paper or metal This is adjusted to approximate four or more squares of the hæmocytometer and counting over that area the number of leucocytes that come into view as we focus through the depth of the cell The results may be recorded as above, or as in the stained specimen, if absolute accuracy has been attained

(*b*) *Method of Counting a Stained Specimen*.—(1) Wright's method may be adopted if the [illegible] be estimated. (2) By low magnification as above described. (3) By high magnification and the use of a standardized diaphragm.

In recording results by the [illegible] the actual number of leucocytes per cubic millimetre is not [illegible] this to be 2,100 and the length of [illegible] occupied as 2 [illegible] the following will give the number of thousand of leucocytes in a [illegible] millimetre of the white clot that has for its base the leucocyte [illegible] This may be designated the migratory count (M.C.) —

$$\frac{[illegible] \times 2,100}{[illegible] \times 1,000} = [illegible] \text{ — Migratory count (M.C.)}$$

7. Methods in Testing the Response of the Leucocyte to Chemical and Bacterial Reagents

Many experiments on the effect of chemical reagents upon the phagocytic activity have been made, and the results of some done about four years ago in conjunction with Captain Hayden, I.M.S., at St. Mary's Hospital Laboratory will be as follows —

That the activity increased proportionately to the strength of citrate solution through which the leucocyte passed.

That incubating the salt and [illegible] corpuscles increased the activity up to a limit, and also that leucocytes left in salt solution for twenty-four hours not only retained their activity, but were more energetic than those drawn more recently from the body.

The same applies to the migratory activity of the leucocyte, for if we draw citrated blood and leave it on the laboratory bench the amount of emigration obtained is in direct proportion to the period of time the leucocyte is in contact with the reagent. At what period of time the leucocyte becomes defunct I have not worked out, but thirty hours after withdrawal from the body they are still active.

As the bacteriotrophic properties of the fluid elements last much longer, it is possible to test in vitro the vital processes that take place in the body, using the emigration of the leucocyte as the indicator.

The corpuscular elements may be tested with varying quantities of plasma, or may be drawn into the reagent practically free of plasma. We may incubate the leucocyte with the reagent for any length of time and test its longevity or staying power, or for shorter periods suitable to the particular reagent. For general purposes one hour is suggested as giving the maximum stimulating or retarding effect. This should be done in a vessel other than the cell in which it is subsequently centrifugalized.

The following methods are tabulated for the sake of reference —

(1) *Without Chemical Agent or Centrifugalization*.

Method I.—Sub-imposing fresh blood beneath a coagulating white clot.

Method Ia.—Using coagulated blood. A modicum of citrated plasma is added to this and used in place of freshly drawn blood as above.

[illegible]

(*b*) *Meth*[illegible]

Method [illegible] — [illegible] and salt [illegible]

Method [illegible] — Incubating [illegible] [illegible] to the formation [illegible]

Method [illegible] — Drawing a mod[illegible] [illegible] chloride of sodium contain[illegible] [illegible] incubation this is certain[illegible] [illegible] find [illegible] number of corpuscles mixed [illegible] and salt [illegible] volume of extracted plasma

This method may be adopted [illegible] power of the leucocyte and its relation [illegible] tion.

Method 4 —Testing the effect [illegible]

(8) THE LEUCOCYTE IN [illegible] USED IN THE TREATMENT OF WOUNDS [illegible] METHODS OF TESTING THE SAME

There is still some confusion [illegible] the physiological treatment of wounds and [illegible] the applications [illegible] present observations

We have nothing to do with [illegible] of Sir Almroth Wright method of using hypertonic [illegible] in which the leucocyte is destroyed with other drastic effects [illegible] If in this stage [illegible] solution is more effectual than [illegible] antiseptics then it should be adopted but as the so called [illegible] commonly used here it seems to be a process of elimination [illegible]

Physiological Treatment of [illegible] *is intact* — Sir Almroth Wright describes this as [illegible] Medals of Healing and the Microbic Infection and hints [illegible] intelligence the marked border line of this stage in his [illegible] Nevertheless following the simple elements of biology would [illegible] the possibility of killing bacteria by means of hemolysis [illegible] affecting the more delicate leucocyte Any thoughtful [illegible] may do so but the former has not [illegible] which if the latter [illegible] have definite knowledge in the [illegible] and other properties of the blood

It should be clear to the [illegible] wound treatment the leucocyte takes [illegible] to be neglected The pathologist [illegible] disinfectants but he is still [illegible] upon the leucocyte The pathologist [illegible] chemical and bacterial [illegible] that deviates from the principles laid [illegible] its usefulness to the individual [illegible]

On these lines we [illegible] state that [illegible]

migratory [illegible] [illegible] [illegible]

the plasma with water [illegible] is harmful a[illegible] agent do not appear [illegible] and much [illegible] into the chemical constituents of the co[illegible] of the [illegible]

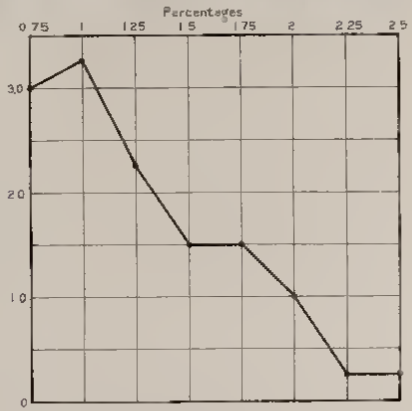


CHART 1.—Showing the different effect of varying percentages of sodium chloride upon the migratory activity of the leucocyte. Figures at the top represent the percentage of salt used. Figures at the side the extent of clot recognized in 0.1 mm.

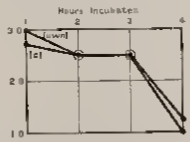


CHART [illegible]. Showing the longevity or survival power of [illegible] incubated at 10° C. with normal serum. Figures at the top give hours. Figures at the side the extent of clot recognized in 0.1 mm.

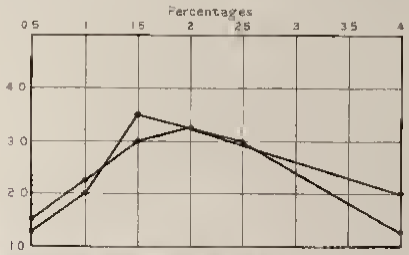
and the reactions of hypophosphite and hypophosphate of sodium were tried but these both have corresponding stimulating effect upon the migratory activity of the leucocyte. Their index of stimulation is not

so great as rhubarb [illegible] but they [illegible] and this appears to be [illegible] role of the [illegible]

Citrate of sodium [illegible] observations on [illegible] in the "Physiological Treatment of Wounds."

Chart 3 gives a double observation upon the resulting activity of the leucocyte under stimulation by this salt as estimated by Method 4.

Sulphate of zinc is also recommended by Sir Almroth Wright and is considered below.



[illegible] 1. Two [illegible] the effect of citrate of sodium upon the migratory [illegible] leucocyte [illegible] represent the percentage of salt used. Figures at [illegible] extent of clot [illegible]

Sulphate of Zinc

We have seen that citrate of sodium is very erratic in its actions upon [illegible] coagulation [illegible] that these are nothing to the vagaries of the above salt [illegible] the blood.

It is [illegible] fundamentally [illegible] whether this be in the [illegible] plasma [illegible] plasma or (3) serum, and appears to affect [illegible] of the leucocyte but this is difficult to differentiate [illegible] known no solutions of this salt does not coagulate whatever the [illegible] and hemolysis [illegible] takes place in low dilutions (? 0·25 per [illegible] Blood drawn into 0·[illegible] per cent solution of citrate and chloride of [illegible] continuing progressive [illegible] of sulphate of zinc does not coagu[illegible] hemolyse but if citrated blood be mixed with solutions of this [illegible] below 0·25 per cent hemolysis takes place. With these complex [illegible] changes taking place it is necessarily difficult to evaluate the [illegible] to the leucocyte [illegible] its migratory activity appears to [illegible] at the high concentration of 0·5 per cent.

[illegible] Stimulation [illegible] Leucocytes in Vitro

In this w[illegible] [illegible] of comparing this that decalcify the blood with th[illegible] that [illegible] We cannot therefore adopt the standard method recommended and [illegible] at comparative figures by using Method 3 in which the [illegible] consists of a solution of 0 citrate and 0 5 chloride of sodium

The maximum stimulation is that p[illegible] by the percentage of the particular salt in conjunction with the [illegible] The comparative index is the mean of the clot occupied divid[illegible] [illegible] of the clot [illegible] due to the stimulation of the [illegible] The [illegible] of action gives the percentage of salt that suppresses [illegible]

Salt	Percentage of salt [illegible] stimulation w[illegible]	Range of action
Sodium chloride	1 0 per cent — [illegible]	[illegible] per cent
Sodium citrate	1 0 " — [illegible]	[illegible]
Zinc sulphate	(?) 0 [illegible] — [illegible]	[illegible]

The first two salts appear to stimulate the migratory activity of the leucocyte equally except that citrate has a larger [illegible] and the choice of these would depend upon the question as to which decalcifying agent is required or not

Sulphate of zinc is so complex in its coarse physiological [illegible] that the only report necessary is that it is a [illegible] appear to interfere with the migratory activity of the leucocyte The strong disinfecting agency of carbolic acid perchloride of mercury does not appear to enter into the leucocyte's story And the other [illegible] agents, flavine brilliant green &c are only of interest in the importance of estimating the lowest dilution that prevents the migratory activity of the leucocyte. A word of warning is [illegible] bichromate of potassium and [illegible] is "In testing reagents for the treatment of wounds it is of little [illegible] adopting leucocyte cream which simply contains the salt stimulated leucocyte used for observations of the bactericidal elements of the serum

Method of Testing the Effect of Absorption of the Particular Reagent used in the Treatment of Wounds

It would appear from observations made on p 11 [illegible] 10 that it is possible to produce *in vitro* conditions that approximately simulate the actual structure of the wound surface Evidence is given that bactericidal reagents have different effects when applied to the surface of the wound to those when they are in contact with the leucocyte below the surface It is therefore necessary to examine reagents used in the treatment of wounds as to their effect upon the leucocyte when incorporated with the red clot, and also when the white clot is affected

In the following [illegible] citrated blood with the plasma diluted with water was [illegible] formation of the white line —

A saturated solution [illegible] chloride was employed and progressive dilutions with citrated plasma [illegible]

Percent [illegible]	[illegible] white clot	Migratory count
(1) [illegible]	per cent	*Nil*
(2) [illegible]	"	0 5/5 – 0 1
(3) [illegible]		1 5/5 0 6
(4)	0 02	1 75/5 0 35

If comparisons with Chart 1 be made it will be seen that there is no danger from the absorption of salt solution but rather the reverse, and it may be possible that the beneficial results obtained from the use of salt solution depend largely upon its *vis a tergo* action as the results of absorption into the surface of the wound

In the following experiment iodine dissolved in iodide of potassium was used and incorporated with the red and white clot respectively —

(A) In the White Clot

Proportion of Iodine	Migratory count
(1) 1 in 125	*Nil*
(2) 1 in 250	"
(3) 1 in 500	1 0/5 – 0 2
(4) 1 in 1 000	1 0/5 – 0 2

(B) In the Red Clot

(1) 1 in 1 000	*Nil*
(2) 1 in 10 000	
(3) 1 in 100 000	Discrete emigration
(4) 1 in 1 000 000	1 0/5 – 0 2

In using this antiseptic the danger of absorption is obvious

(10) On an Important Phenomenon Revealed by Comparing the Migratory Activity of the Leucocyte when Bacterial Agents are Applied Above and Below the White Line Respectively

In Sir Almroth Wright's book, 'Wound Infections' the following prognostications are made —

'Again it looks as if it might be possible by very simple experiments to resolve the problem as to why, in gonorrhœa and also in other surface infections, the purulent discharge is suddenly arrested when the microbes succeed in invading the blood stream or establishing themselves in an articulation or elsewhere in the interior of the body It would seem possible (for something of this kind would seem to occur in septicæmias supervening on wound infections) that we may be dealing here with a paralysis of the emigrating powers of the leucocytes Or again, it is possible that in these cases emigration may be simply suspended by a redistribution of the chemotactic forces In other words the cessation of the external discharge may simply mean that there is now in the blood a bacterial poison, and that this chemotactic element, acting upon the

[illegible]cytes as [illegible] counterbalance [illegible] the chemotaxis [illegible] stenosis produced by the bacteria on the [illegible]

Sir Almroth Wright also states (W [illegible] p [illegible]) that a thick emulsion of bacteria towards emig[illegible] [illegible] own experiments *when the bacteria are* [illegible] and even supernatant fluid of a well centrifuged [illegible] had to be diluted tenfold before emig[illegible]

On the other hand a thick emul[illegible] [illegible] incorporated with the white clot appeared to have [illegible] tion of leucocytes Two examples of the [illegible] in this paper

On p [illegible] (Heading I) the necessity [illegible] are discussed and a comparison is made [illegible] saline (2) the same with a staphylococcus [illegible] an emulsion of citrate organism into the clot [illegible]

Later the negative phase of the leucocyte is [illegible] following an inoculation of the same organism that is [illegible] white clot and here is used progressive dilution [illegible] test and still no marked alteration in the emigration takes place [illegible] was evident and no growth of the organism took place in the [illegible] of the emigrating leucocyte although profuse in other parts of the white clot

The following experiment in which the use of salt solution was reduced to a minimum brings out the differentiation more clearly —

Citrated blood was drawn and centrifugalized The plasma was decanted and mixed with an equal volume of water, and this was mixed with corresponding volume of corpuscular elements A concentrated emulsion of active typhoid organism was made in normal saline and diluted with same medium and one volume of this was incorporated with twenty volumes of the above citrated blood In injecting the white clot progressive dilutions of the emulsion were made in citrated plasma

In the following the percentage of emulsion in the citrated blood is the amount in the plasma content of the same

(1) *Reagent applied to the Red Clot*

Percentage of reagent incorporated with citrated blood	Migratory count
(1) 1 in 100	*Nil*
(2) 1 in 1 000	0 75μ – 0 1
(3) 1 in 10 000	1 4 5 – 0 28
(4) 1 in 100 000	1 o/o – 0 3

Further dilutions gave the same result as the latter with a margin of experimental error of 1·5 5 to 2 0/5

(2) *Reagent applied to the White Clot*

Percentage of reagent in white clot	Migratory count
(1) 1 in 7	0 25 o – 0 05
(2) 1 in 43	2 0 o – 0 4
(3) 1 in 179	$\frac{3}{5}$ – 0 6
(4) 1 in 1 075	$\frac{2}{5}$ – 0 1

Bacterial [illegible] tory activity of the [illegible] increasing the [illegible] compared with the white clot and if the density of the emulsion in the above experiment had been taken into account the difference would be more evident Surely Sir Almroth Wright had this experiment in his mind's eye when he wrote the prophetic words quoted I have little doubt that if a gonococcal emulsion had been used in place of a typhoidal one that a greater difference in the above experiment would have been obtained

If complex phenomena of this nature can be demonstrated in *vitro* by the simple processes described, we are entitled to recommend the method as a suitable one for investigating the various disinfectants and reagents used in the treatment of wounds The white leucocytic line in the cells represents the healthy granulating surface of the wound and reagents to be tested should be incorporated with the adjacent white clot It is advisable however, also to test the effect of absorption of the reagent by incorporating the same with the artificially produced wound membrane

Further investigation is necessary before we can arrive at definite conclusions as to the effect of a reagent upon the leucocyte as it exudes or emigrates into the wound

We have to explain why the leucocyte passing out from the blood stream and coagulating appears to lose its migratory activity while at the same time retaining or may be increasing its phagocytic activity This may be a vital phenomenon and if so when established, will help to resolve the question of the use of decoagulating agents in the treatment of wounds It is possible that a leucocyte, received into a decalcifying agent loses some of its antecedent characteristics while the same passing through the stage of coagulation may increase the phagocytic activity at the same time as it loses the power of emigration

Further elucidation of these problems will be considered in the second part of this paper on The Nature of the Leucocyte upon its Exit from the Body in which it will be shown that the reaction of the leucocyte depends to whether the reagent be applied at the exit from the body or at a later period of time

II Method of Constructing the Observation Cell

(a) *Finish the Manufacturer is employed* —A complete glass cell of uniform [illegible] could be made but this would confine observations to the fresh specimen only

(b) A three sided shape or cell of glass with uniform dimensions could be constructed and placed between thick cover slips or pieces of slide and the edges sealed with sealing wax or other resinous material

(c) *Laboratory Adaptations* —The nearest glazier will easily cut up microscopical slides as follows —

(1) Narrow longitudinal strips of glass from six slides of uniform thickness about 1 mm Small pieces for ' shapes may be obtained at the same time

(2) [illegible]

(3) [illegible]

[illegible] obscure [illegible] the required. [illegible] the cell [illegible] make sealing wax [illegible] boxes.

A hinged [illegible] block is placed between two pieces of glass (2) and grasped [illegible] (One side is hinged into well melted paraffin wax which [illegible] the glass hinge the reverse side is done in the same way [illegible] (two minutes) the shape which should be shaped [illegible] be with brown without soiling the glass. More [illegible] bottom of the cell. The process of reinforcing by [illegible] very simple the sides and bottom of the above cell [illegible] melted mixture of these two and when the edge of [illegible] is melted removed and cooled. If absolute accuracy as to the [illegible] cell is [illegible] is advisable to put pieces of glass (1) between [illegible] the cell is there is bound to be some contraction on the cooling of the [illegible].

Simple cells for [illegible] photons may be made by using narrow pieces of glass cut from (3) [illegible] small glass hinge grasping firmly by means of forceps warming in the flame and applying melted sealing wax to the edges

(*To be continued*)

CASES OF CEREBROSPINAL FEVER IN THE ROYAL NAVY AUGUST 1 1916—JULY 31 1917

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In addition to the cases of cerebrospinal fever in the Royal Navy during the third year of the war the total number of cases occurring since the outset of hostilities have been analysed as far as is necessary for purposes of comparison.

The present report contains —

(1) Remarks on the incidence of the cases.
(2) Remarks on some clinical aspects.
(3) A summary of the results of treatment.
(4) A brief history of the outbreaks at various centres.

(1) Incidence of the Cases.

During the year August 1 1916 to July 31, 1917 there were 141 bacteriologically proved cases of cerebrospinal fever as compared with 101 during the second and 170 cases during the first year of the war, the percentages for the first, second, and third years being 41·25, and 34 of the total 417 cases. The rise during the third year of the war cannot be entirely explained by the increased personnel of the Navy, as there was a distinct fall in the number of cases during the second year as compared with the first year of the war whereas the personnel presumably continued to increase throughout the war. The absolute rise of the Naval cases during the third year of the war corresponds with a rise in the number of cases in the civil and military populations[1] and also with an increased percentage of carriers in the Navy.

Bacteriological examination of the throats of new entries from December 1916 to the end of July 1917 made at Haslar (Hon. Staff Surgeon P. Eldes R.N.V.R.) Plymouth (Fleet Surgeon R. S. Bond) Chatham (Staff Surgeon J. H. Burdett) and of non contacts (new entries and drafts) at Greenwich (Deputy Surgeon General P. W. Bassett Smith C.B.) showed that out of 46,107 officers and ratings there were 1,509 carriers or 3·3 per cent., as compared with 2·7 per cent. obtained in a similar but smaller collection of cases during the first half of 1916. During the third year of the war the percentage of carriers at different centres varied from 0·1 at Plymouth to 4 at Greenwich and also varied at different periods (vide pp. 34, 39).

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[1] Based on the vital statistics given by Dr. T. H. C. Stevenson of the General Register Office.
[2] Colonel H. J. Reece C.B., R.A.C.

[illegible] the large depots at Portsmouth [illegible] Plymouth [illegible] (18) and Chatham (16) [illegible] 110 or 77 per cent [illegible] 20 or 14 per cent The Royal Marine Light Infantry Depot at Deal did not have any cases Of the 417 cases of cerebrospinal fever in the Navy during the first three years of the war 310 or 75 per cent arose in the large depots at Portsmouth (110) Plymouth (94) the Crystal Palace (59) and Chatham (49) while 42 cases or 10 per cent were reported from sea-going ships No case of proved meningococcic meningitis has occurred at Osborne or Dartmouth during the war

The monthly incidence with the results is shown below The largest number of cases and deaths occurred in January In the two previous years of the war the largest number of cases and of deaths occurred in February

		Cases	Deaths	Recoveries
1916	August	3	1 or 33 3 per cent	2 or 66 7 per cent
	September	5	1 90	1 , 80
	October	3	1 33 3	2 66 7
	November	6	3 50	3 50
	December	14	7 50	7 50
1917	January	30	13 43 3	17 56 7
	February	22	7 , 31 8	15 68 2
	March	27	7 , 25 9	20 , 74 1
	April	13	5 38 5	8 61 5
	May	11	4 36 4	7 63 6
	June	5	1 20	4 80
	July	4	2 50	2 50
		143	52	91

Out of the 143 cases 92 or 64 3 per cent, occurred during the first four months of the year and out of the total 417 cases during the first three years of the war 299 or 71 7, arose during the first four months of the year

MONTHLY INCIDENCE AND MORTALITY DURING THE THREE YEARS OF THE WAR

	Cases				*Mortality*			
	1914 15	1915 16	1916 17	Total	1914 15	1915 16	1916 17	Total
August	0	4	3	7	0	2	1	3
September	0	4	5	9	0	3	1	4
October	0	3	3	6	0	1	1	2
November	1	6	6	13	0	5	3	8
December	2	8	14	24	1	4	7	12
January	27	8	30	65	16	3	13	32
February	60	26	22	108	35	7	7	49
March	34	20	27	82	14	6	8	28
April	21	7	16	44	8	2	5	15
May	12	7	11	30	8	0	4	12
June	6	3	5	14	4	1	1	7
July	3	8	4	15	3	2	2	7
	170	104	143	417	90	37	52	179

Out of the 143 cases 18 or 12 6 per cent, proved fatal within forty-eight hours of the onset of these fulminating cases 5 arose in January, 3 in November, 2 in December and in June, and 1 each in the other months except August and May Twelve or two-thirds of the fulminating cases occurred before February, thus conforming to the rule that such cases are commoner at the commencement of than later in an epidemic

Age Incidence—Among the 143 cases 92 or 61 4 per cent, were under 20 years of age (110, or 76 9 per cent being under 25 years of age) and the number of cases progressively diminished in the succeeding decades In the two previous years of the war the percentage mortality of the cases under 20 years of age was lower than in the succeeding decades whereas in the third year of the war it was considerably higher than in the two succeeding decades The average age of the 143 cases was 21 7 years, of the 52 fatal cases 21 7 years, and of the 91 recoveries 21-3 years The extremes of age were 15 and 55 years

Age periods	Number of cases and percentage of the total 148 cases	Deaths and percentage in the age periods
15 19	92 or 61 3 per cent	36 or 38 1 per cent
20 29	33 „ 23 „	10 „ 30 „
30 39	11 „ 7 7	3 „ 27 2
40 49	5 „ 3 5	2 „ 40
50	2 „ 1 4	1 „ 50
	143	52

The mortality in the same age periods for the 117 cases during the first three years of the war is given for comparison

Age periods	Number of cases and percentage of the total 117 cases	Deaths and percentage in the age periods
15 19	265 or 63 5 per cent	101 or 38 1 per cent
20 29	100 „ 24 „	49 „ 49 „
30 39	30 „ 7 2 „	15 „ 50 „
40 49	17 „ 4 1 „	11 „ 64 7 „
50 59	5 „ 1 2 „	3 „ 60 „

* 67 [illegible] with 26 deaths or 38 per cent being in the boy training establishments Impregnable * Powerful and Shotley barracks

Mortality—Out of the 143 cases, 52 or 36 2 per cent proved fatal as compared with 35 6 per cent in the second and 52 9 per cent in the first year of the war Among 417 cases of cerebrospinal fever in the Navy during the first three years of the war there have been 179 deaths or 42 9 per cent, of which 124 or 69 3 per cent occurred in the first four months of the years

Day of death Five cases were fatal on the first day 4 on the second 7 on the third 8 on the fourth 2 on the fifth, 2 on the sixth day, 5 in the second week 10 in the third week 3 in the fourth week 2 in the fifth week 2 in the sixth week and single cases on the fifty-seventh and sixty-

seventh day [illegible] half [illegible] first six days of the disease and [illegible] kind was employed [illegible] 2 of them were found [illegible] had not [illegible] medical observation

Ranks and Ratings —There were 5 officers [illegible] (fatal) a Commander (fatal) a Lieutenant [illegible] 13 Midshipmen [illegible] (recoveries) The 147 ratings were Seamen [illegible] 31 (11 deaths), Stokers 20 (8 deaths) Royal Naval [illegible] deaths), Marines 6 (1 death) Ships Stewards [illegible] 11 death) Sick Berth Staff 3 (0 death), Engineers 2 (1 death) Wireless 2 (0 death) Boy Servant 1 (fatal) Naval Apprentice 1 (fatal) and Cook's Mate 1 (recovery)

(2) Remarks on Some Clinical Aspects

Onset —Usually the initial symptoms are malaise fever headache vomiting and progressive increase of nervous symptoms, so that within twenty four hours the condition is highly suggestive In some cases the onset is more gradual with somewhat indefinite symptoms lasting several days In others it is startlingly acute Thus in 2 cases it was immediate in 2 convulsions were the first sign in [illegible] (3 fatal) the first indication of illness was fainting and in 1 instances (2 fatal) the patient was found unconscious Death in this apoplectiform mode of onset seems to be the probable explanation of the following cases —

A man aged 40 who went to bed at 7 30 p m feeling ill but saying he would be all right next morning was found dead in his hammock at 6 a m A boy aged Shotley aged 15 complained at 9 p m of slight sore throat, for which he did not seek medical treatment at 4 30 a m next day he was found dead In these two cases the diagnosis was made from examination of the cerebrospinal fluid after death

Among 147 cases of cerebrospinal fever in the second and third years of the war 12 or 5 per cent had this form of onset and 6 of them proved fatal The initial shock may be so considerable that for a time the temperature may be normal, or below normal though it rises in a few hours this was noted in 6 cases (3 fatal) one of these patients was unconscious when first seen and in another who was operated upon for a diagnosis of gastric ulcer perforation and found to have a normal abdomen lumbar puncture was at once performed at the suggestion of the anæsthetist Temporary Fleet Surgeon C W Morris and turbid fluid containing meningococci obtained Transfer to hospital may be followed by alarming collapse one patient died in the ambulance and another a few hours after admission Vomiting and diarrhœa are common at the onset and in rare instances (4 3 fatal) were accompanied by so much abdominal pain as to imitate acute abdominal disease

When the onset is gradual and preceded by catarrh it may be difficult to decide whether the meningococci invasion is superimposed on an ordinary influenza or catarrh or whether the catarrh is the commence

[illegible] the disease In 3 cases [illegible] appeared six days after [illegible] rubella in one instance [illegible] admission to hospital [illegible] chicken-pox in two patients with [illegible] bronchitis and suspected pulmonary tuberculosis [illegible] another case the day after discharge for bronchitis [illegible] new entries to be attacked, which is usually explained as due [illegible] diminution of their resistance by the trials incident to the change from civilian life, was shown by the occurrence of the disease within three weeks of joining the Service in 31 or 21 7 per cent of the 143 cases, one of these a man aged 10 who had left the Service seventeen years before he was called up again, was found dead in his hammock The average age of the other 30 cases was 19 3 years Many of these new entries had been vaccinated shortly after joining The mortality of the 31 cases, 10 (32 per cent), is below that (36 2 per cent) of the 143 cases These various factors would favour systemic invasion by meningococci

Rashes due to cerebrospinal fever were recorded in 86 or 60 per cent out of the 143 cases. The characteristic rash is hæmorrhagic It may come out rapidly, and progressively increase in extent and size, especially in the fulminating cases so that though there is no rash when first seen a few hours later it is well out In other cases there is first an erythema macular or blotchy or a rose spot eruption which subsequently becomes petechial or hæmorrhagic The rash may not present more than one stage it may be purpuric from the start or may not advance beyond the erythematous stage The cases in which the rash has become hæmorrhagic are entered as such and only those which remained erythematous macular or blotchy are so classified The erythema has been described as a premeningitic rash [1] and as transient this is probably why it is so seldom recorded Out of the 86 cases, 70 were described as hæmorrhagic, 10 as mottled blotchy, or erythematous and 5 as rose spots In one instance ulceration occurred in the larger purpuric patches, a very rarely recorded complication cases have been reported by Bovaird [2] Robb,[3] and Elliott and Kaye [4] (complicated by trench feet) all the four patients recovered

Out of the 86 cases 36, or 43 per cent, proved fatal, as compared with the mortality of 36 2 per cent for all the 143 cases As is well known the fulminant and most acute cases are especially prone to have a hæmorrhagic rash, out of the 28 cases fatal during the first week of the disease, 22 (or 78 6 per cent) had a rash all the 9 cases fatal during the first twenty four hours of the disease showing it while out of the 24 cases fatal later than the end of the first week 14 or 58 3 per cent, had a rash Among 110 cases of cerebrospinal fever in the Navy during the war rashes were

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[1] Symonds *Lancet* 1917, vol ii p 86
[2] Bovaird D *Arch Int Med* Chicago 1908 vol iii p 267
[3] Robb *Proc Roy Soc Med* (Therap and Pharm Sect) Lond 1915 vol ix p [illegible]
[4] Elliott and Kaye *Quart Journ Med* Oxford 1916 17 vol x p 381

noted [illegible] with a mortality [illegible] practically [illegible] of the total [illegible]

Other [illegible] associated with [illegible] fatal) [illegible] purpuric [illegible] cases of [illegible] hemorrhagic [illegible] was fatal) in the [illegible] days after the [illegible]

In [illegible] only show [illegible] procedural [illegible] In a case fatal on the [illegible] day [illegible] and there were extravasations in the skin [illegible] conjunctival hemorrhages

Herpes [illegible] 11 per cent of the 113 [illegible] In [illegible] Herpes genitalis appeared in the [illegible] (with [illegible] 10 cases) of the [illegible] in two instances [illegible] together on the right and left lips [illegible] cases [illegible] per cent showed also [illegible] appeared on the [illegible] day but usually [illegible] but three [illegible] days after the [illegible] Eight cases showed herpes and [illegible] rash and 10 cases had herpes and [illegible] herpes in one case labial herpes on the sixth day [illegible] the disease [illegible] intramuscular injection of sonamin 6 gr Of the [illegible] 11 per cent proved fatal this mortality is very much [illegible] per cent) of the total 113 cases thus agreeing with the [illegible] herpes in cerebrospinal fever is a good prognostic [illegible] herpes thus contrasting with the hemorrhagic rash [illegible] proved fatal in the eighth twelfth fifteenth, fifty seventh and sixty-seventh days of the disease Out of the 410 cases of cerebrospinal fever during the first three years of the war herpes was noted in 91 or 22 2 per cent Nettel finds that in 100 cases in France labial herpes occurs in a third of the cases and is commoner than purpura As has been shown above purpura has been more than twice as frequent as herpes in the Navy during the war

Rare Manifestations of the infection —Ocular symptoms Photophobia a very early symptom was noted in 11 cases out of 410 cases of cerebrospinal fever during the first three years of the war 12, or 10 2 per cent, had photophobia Conjunctivitis was reported in 10 instances usually it occurred at or shortly after the onset but in one case it was observed on the twelfth day (after the intramuscular injections of 6 gr of sonamin) and in another on the thirtieth day of the disease Out of the 410 cases it was noted in 21 or 5 6 per cent Unilateral panophthalmitis in 2 cases necessitated excision of the globe and in another case fatal on the fourth day, there was iritis During the three years of the war destruction of the eyes occurred in 4 cases (in one bilateral) Strabismus is

Nettel *Revue* [illegible] p 111

[illegible] Out of the 110 cases 42 or 10 2 per cent [illegible] 17 per cent proved fatal [illegible] Out of the 110 cases [illegible] 73 3 per cent proved fatal The prognosis [illegible] appears [illegible] in cases with ptosis than in those with strabismus Nystagmus was reported in 5 cases (2 deaths) of the three that recovered one had nerve deafness Out of the 110 cases nystagmus was mentioned in 11 or 2 6 per cent Optic neuritis was detected in 1 (1 death) being early in 2 but few cases were examined

Nervous Symptoms—Hemiplegia occurred in one case, and after the subsiding of the internal capsule was found Out of 110 cases during the three years of the war hemiplegia was noted in 11 or 2 6 per cent Aphasia and dysarthria each occurred in one case (both recoveries) Dysphagia was noted in 1 cases (2 deaths) Bulbar paralysis was recorded in one instance the day before death Deafness was recorded in 9 cases usually nerve deafness otorrhœa was observed in 1 case (General hyperesthesia was recorded in 8 cases and delirium tremens in 2 cases both recoveries) in the second year of the war delirium occurred in 2 cases (1 fatal) The knee jerks were absent in 12 cases (3 deaths) and the plantar response was extensor in 14 cases (6 deaths) In the first year of the war the extensor response was recorded in 11 cases so out of 43 cases it was found in 24 or 8 per cent No special significance could be attached to these alterations of the knee jerk and plantar response

Other Clinical Features—Bronchitis was well marked in 8 cases (1 death) and was a grave complication Pleurisy was noted in one case only (recovery) Mitral incompetence was diagnosed in 5 cases (all recovered) as compared with 1 cases (1 death in the second year of the war) Pericarditis appeared in one case out of the 410 cases during the three years of the war it was noted in 7 (3 deaths) Albuminuria was noted in 1 cases 1 death in one instance coinciding with a serum rash and chill of the genitals Polyuria was observed in 1 case, and pyuria in 2 cases (one case fatal recovery) had temporary glycosuria and albuminuria in the second year of the disease In 3 cases furunculosis was troublesome during convalescence Inflammation of the right parotid (non-suppurative) on the sixth day of the disease was noted in 1 case (recovery)

Arthritis was noted in 8 cases (1 fatal) on the third, fourth fifth sixth seventh eighth ninth and thirteenth days affecting the knee (3 cases) ankles and wrists and ankles elbow ankle and finger and several joints In 2 of the cases there was endocarditis Seven of the 8 cases had purpura and in connection with the view that arthritis when associated with purpura is due to hæmorrhage into the synovial membrane it may be mentioned that in another case the onset of purpura was accompanied by joint pains According to Nettle[1] meningococcic purpura

[1] Nettle *Rev. Med.* 1911 tome xxxi p 138

[illegible] with arthritis [illegible] and [illegible] 410 cases of cerebrospinal [illegible] the Navy during the [illegible] of the war there was [illegible] and [illegible] found at the necropsy. In [illegible] being sterile. In [illegible] wrists occurred on the fifth [illegible] and [illegible] twenty-second days that [illegible] was accompanied by arthralgia [illegible] and in the [illegible] of the wrists [illegible] phthalmia [illegible] requiring excision. The [illegible] of the elbow [illegible] of the extensor [illegible] wrist. [illegible] Among 110 cases [illegible] in the Navy [illegible] three years of the war [illegible] 30 [illegible] per cent. [illegible] or 2 per cent. [illegible]

Orchitis or epididymitis without [illegible] occurred [illegible] on the sixth, eighth, ninth, eleventh and twelfth days of the disease [illegible] at the same time as a serum rash and [illegible] there was [illegible] the genitals as [illegible] Gaskell. The other case did not show a serum rash [illegible] epididymitis was bilateral in [illegible] unilateral [illegible] Among the 410 cases of cerebrospinal [illegible] the Navy [illegible] epididymitis without [illegible] per cent. [illegible] cerebrospinal [illegible] swelling [illegible]

In [illegible] which in the first [illegible] puncture [illegible] was found at the necropsy [illegible] eighteenth day) and in the other [illegible] eleventh day) pneumococcic. In the [illegible] case of mixed meningococcic and pneumococcic [illegible] forms (detected at the first puncture [illegible]) [illegible] invasion (otitic and infection [illegible] puncture [illegible]). Some [illegible] 2.8 cases [illegible] per cent. [illegible] the case of combined [illegible] meningitis

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[1] Gaskell, J. W. [illegible] of Medicine [illegible] Lancet [illegible] 1924.

[illegible] cases the [illegible] primary to [illegible] the [illegible] [illegible] infection [illegible] [illegible] meningitis [illegible] [illegible] cases only [illegible] date of [illegible] in connection with Netter and [illegible] infection of meningococcic [illegible] months of 1917 when [illegible] meningitis since December [illegible] was presumably intensified

[illegible] meningococcic by bacteriological examination [illegible] included in these 113 cases [illegible] is to exclude cases of meningitis [illegible] terminal [illegible] meningitis and this bacteriological test [illegible] obviously [illegible] That cases of meningococcic [illegible] may [illegible] by the occasional failure to find [illegible] cerebrospinal fluid during life and its subsequent discovery at the [illegible] statistical error thus introduced is [illegible] which will result from the inclusion of cases [illegible] manifestations and in the latter event it will [illegible] Even the line is no one sign or symptom is [illegible] of meningococcic as opposed to other forms of meningitis [illegible] meningeal symptoms and meningococci in the cerebrospinal fluid, though possibly genuine cases [illegible] demanding prompt serum treatment have not been included in these cases as they may have been examples of carriers with meningococci in their fauces

The diagnosis in the [illegible] cases rising in association with cases of proved meningococcic meningitis is difficult Groups of such cases occurred in the Loyal training establishments at Shotley (July August 1916) and in the Powerful (December 1916) the Shotley cases presented meningitic symptoms, but among the Powerful cases febrile purpura without meningeal manifestations was prominent thus suggesting transient meningococcaemia Netter in his account of meningococcic purpura without meningococci in the cerebrospinal fluid states that the diagnosis can be made by a blood culture and by the discovery of meningococci in the contents of bullae produced by friction of the purpuric spots But in the Powerful cases these tests were negative Such cases recover for the purposes of this analysis bacteriological proof of meningococcic infection has been demanded, but in practice antimeningococcic serum should be given to probable cases pending the results of laboratory examination A clear cerebrospinal fluid at the first puncture does not

[1] Beriel et Durand *Lyon m[illegible]* 1918 tome cxxi p 813

[2] Netter et Salmir *Bull et m[illegible] Sc[illegible] [illegible]* 1917 [illegible] tome xlii p 789 794

[illegible] on the other hand [illegible] that at the [illegible] —[illegible] having been given on the [illegible]—is not [illegible] is the serum [illegible] polymorphonuclear [illegible] and cerebrospinal fluid [illegible] presence of polymorphonuclear leucocytes on the first tapping but without demonstrable meningococci present great difficulty may [illegible] I course he treated [illegible] meningococcic serum and then received evidence in favour of a meningococcic origin not only from the point of view of this therapeutic test but also because other forms of polymorphonuclear meningitis usually prove fatal The bacteriological criterion obviously enables a more accurate view to be taken of the effects of serum treatment and having adopted this standard it is unnecessary to discuss the differential diagnosis from other forms of meningitis and from the meningism so comparatively common in association with acute infections

( ) Summary of the Results of Treatment

Six out of the 113 cases were recognized after death only and were not treated for the disease 3 cases (6 fatal) had lumbar puncture only and 11 cases in which lumbar puncture had been followed by intraspinal injection of serum (2 cases both fatal) quinine (9 cases [illegible] recovery or [illegible] (8 cases 2 deaths) So that out of 26 cases which did not have serum treatment 11 or 42 3 per cent proved fatal In the first year of the war when the serum available appeared to be inert, the mortality of the 140 cases was 90, or 62 6 per cent or much the same Among the [illegible] cases treated by some form of serum the mortality was 38 or 32 1 per cent or almost the same as in the second year of the war namely 30 deaths or 31 6 per cent out of 95 cases treated by serum During these two years, therefore, 212 cases were treated by serum with a mortality of [illegible] per cent This forms a striking contrast to the mortality of [illegible] per cent among 101 cases treated by serum during the first year of the war when Flexner's serum was not available During the second and third years of the war 113 cases received Flexner's serum alone or in combination with other serums and 41 of these or 36 6 per cent proved fatal, the mortality of the 109 cases treated by Flexner's serum alone being 30 or 27 5 per cent, and of the 34 cases treated by Flexner's serum in combination with other serums 11 or 32 3 per cent. During the third year of the war Flexner's serum was used in 101 out of the 117 cases treated by serum In 82 cases it was the only serum employed with a mortality of 24 or 29 3 per cent among 23 cases in which it was employed in combination with other serums (Gordon's, Lister Institute Mulford and Burroughs Wellcome and Co's), the mortality was 8 or 34 4 per cent and among the 13 cases treated by serums other than Flexner's there were 6 or 46 3 per cent deaths These cases were given Gordon's serum (7 cases, 3 deaths) Toronto Laboratory's (2 cases recoveries) Mulford's

[illegible] fatal) the Lister Institute monovalent (1 case, recovery) Lister Institute's multivalent and Pasteur Institute's multivalent (1 case fatal) and in one case (fatal) the brand of serum could not be elicited. Flexner's serum therefore appeared to give the best results.

Out of the 117 cases 96, or 82 per cent., received the serum intrathecally within the first three days of the disease with a mortality of 31 cases or 32 per cent., which is lower than that of the 17 cases commencing serum treatment between the fourth and seventh days of the disease, namely 7, or 41 per cent. But among the 4 cases in which serum treatment was begun after the seventh day there were no deaths. During the second and third years of the war 313 cases were treated by serum, and the combined figures give much the same result as in the third year of the war. The statistics of the first year of the war have not been utilized as the serums then in use appeared to be inert.

Day on which serum treatment was begun	Cases	Deaths	Recoveries
1st to 3rd day	170	53 or 31·1 per cent	117 or 68·8 per cent
4th to 7th day	32	12 " 37·5	20 " 62·5
Later than 7th day	10	3 " 30	7 " 70
	212	68 or 32 per cent	144 or 68 per cent

The number of cases treated late by serum is too small to throw doubt on Flexner's statistical evidence based on analysis of 1,211 cases that the mortality rises progressively with delay in beginning the serum treatment, but it is obvious that cases which survive without serum treatment until after the seventh day are not fulminating and probably some are so mild as to recover spontaneously.

The number of occasions on which serum was given intrathecally varied from one to fourteen. The best results were obtained in 88 cases receiving from two to six injections, namely a mortality of 23, or 26 per cent.; out of the 15 cases that had seven or more injections 8, or 53 per cent., proved fatal.

Fourteen cases received one injection only of serum, and 7 proved fatal, 5 being fulminating cases. 27 received two doses (6 deaths), 20 three doses (1 death), 16 four doses (6 deaths), 16 five doses (5 deaths), 9 six doses (2 deaths), 7 seven doses (1 death), 1 eight doses (recovery), 1 nine doses (fatal), 3 ten doses (1 death), 2 eleven doses (1 death), 1 twelve doses (fatal), and 1 case fourteen doses (recovery). Lumbar puncture was performed twenty-seven times in a fatal case which received ten intrathecal injections, and twenty-six times in a case that recovered and also had ten injections. The case tapped on twenty-seven occasions had a hernia cerebri from an old injury which swelled up when the intracranial pressure rose.

The following figures bear on the question of the effect exerted by hypodermic or intramuscular injection of the serum. 36 cases received serum hypodermically or intramuscularly, but as they all had serum intrathecally as well there are no data bearing on the effect of the hypodermic

or intramuscular method alone.[1] Out of the [illegible] proved fatal whereas of the 81 cases treated [illegible] serum 21, or 26 per cent., proved fatal. [illegible] the second year of the war the additional [illegible] receiving hypodermic or intramuscular injections [illegible] of serum 21 or 35 per cent. proved fatal, [illegible] by intrathecal injections alone 42 or 2[illegible] [illegible] figures for the first year of the war are [illegible] employed appeared to be inert.) There is thus no evidence that hypodermic or intramuscular injection influences the effect of the intrathecal injection of serum; it would not be fair to draw any further conclusion as in some cases the hypodermic or intramuscular method was probably employed because of the severity of the patient's condition.

Intravenous in addition to intrathecal and hypodermic injection of serum was tried in 2 cases (1 fatal).

The quantity of serum given varied very much; the largest amount given intrathecally was 240 c.c. in a fatal case, but in a case that recovered 210 c.c. intrathecally. In 77 cases that recovered the amount given, which in some cases include hypodermic or intramuscular injections of serum, may be arranged as follows:—

Received 30 c.c. or less		11 cases
between 30 and 60 c.c.		30 "
60	100	17 "
100	200	16 "
over 200 c.c.		3 "

The extremes were 15 and 350 c.c.

In addition to Gonin's serum intrathecally two cases were given intravenous injections of tartrate of antimony; one case had three such injections and proved fatal; the other had one such injection and recovered. A stock vaccine was given to one case only (fatal).

Serum rashes.—Urticarial, erythematous, morbilliform, or in very few instances scarlatiniform, occurred in 58 or 60 per cent. out of the 98 cases treated by serum and surviving for more than ten days, and on an average appeared ten days after the first injection of serum. Out of the 241 cases given serum and surviving for ten days or more, during the first three years of the war 90 or 41 per cent. had a serum rash. During the second year of the war serum rashes, which were noted in 30 per cent. of the 74 cases given serum and surviving for more than ten days, were found to be specially connected with the use of Lister's and Burroughs Wellcome and Co.'s serums. During the past year this was even more

[1] Hewlett insists that a very little serum [illegible] is useless to inject [illegible] any influence on the meningococci in the subarachnoid space. [illegible] Prevention and Speech Treatment of Epidemic Meningitis, p. 1[illegible] Institute for Medical Research.

[illegible] Flexner's serum [illegible] the 58 cases of serum [illegible] brand of serum and [illegible] in the incidence of [illegible] 60 per cent is com[illegible] with the increased [illegible] namely from 30 or 11 per cent of the 95 cases [illegible] the second year of the war [illegible] 104 or 89 per cent [illegible] during the third year [illegible] war The serum rash [illegible] protein reaction due to a foreign protein, and it might be suggested that the reason why Flexner's serum is, as shown below, [illegible] remarkably prone to produce this reaction in British subjects is that it obtained from horses in America

Out of the 83 cases receiving Flexner's serum only there were 51, or 62 per cent, with rashes, but out of the 83 cases 11 died before the occurrence of a serum rash could be excluded so that out of the 71 cases which recovered (68) [illegible] (if fatal) survived for more than ten days (13 cases) 51 or 71 per cent [illegible] a serum rash Out of the 58 cases that recovered there was a serum rash [illegible] or 77 6 per cent and out of the 13 fatal cases surviving more than ten days [illegible] six or 46 per cent These figures though small point to the lower incidence [illegible] serum rash in the graver cases Out of 22 cases given Flexner's and other [illegible] of serum 17 recovered or survived more than ten days and 5 or 30 per [illegible] of these had a rash thus the percentage incidence of serum disease was [illegible] than in cases treated solely by Flexner's serum Out of 13 cases treated by [illegible] other than Flexner's 8 recovered or lived more than ten days and of these [illegible] or 25 per cent had a serum rash

Flexner's serum was given hypodermically as well as intrathecally in a number of cases, and out of 26 of these cases that recovered or (if fatal) survived for more than ten days a serum rash was noted in 11, or 42 per cent whereas out of 61 cases which received Flexner's serum by the intrathecal route only and recovered or (if fatal) survived for more than ten days 43, or 70 per cent manifested a serum rash As far as these figures go, the serum rash appears to be commoner after intrathecal injection alone than after the combined intrathecal and hypodermic injection Out of Currie's[1] 70 cases of cerebrospinal fever treated mainly by subcutaneous injection of serum (36 cases subcutaneous injection only 13 cases with one intrathecal and the remaining injections subcutaneously, and [illegible] case with one intrathecal and one intravenous and the remaining injections subcutaneously) 20 or 55 per cent had rashes Comparison of Currie's [illegible] the 61 Naval cases (with 10 per cent of rashes) confirms Flexner's [illegible] that possibly the manifestations of serum disease are more frequent after the intrathecal than after the subcutaneous method of injection [illegible] by [illegible] serum therapy generally These however, are small and selected groups of figures and do not just [illegible] a final conclusion Goodall[2] says that analysis of a large number of cases shows that almost a third of the patients

[1] Currie J B [illegible] *Hygiene* Cambridge 1908 [illegible] p 63

Flexner S [illegible] 43 103

[2] Goodall E W System of Medicine (Allbutt and Rolleston) 1911 vol ix p 115

[illegible] injections of serum [illegible] [illegible] Metropolitan Asylum [illegible] was different [illegible] that [illegible] cant) [illegible] all cases of cerebrospinal fever [illegible] serum [illegible] the first [illegible] of the war. It cannot therefore be said that [illegible] evidence of [illegible] has proved to be higher after the intrathecal [illegible] than the [illegible] of injecting serum.

In [illegible] tuberculous as well as intrathecal injection of [illegible] the serum [illegible] begin around the site of the subcutaneous puncture and subsequently become general.

Quite commonly [illegible] rash appears fades and about two days later again becomes prominent; the first may be erythematous and the second urticarial and [illegible] irritating. These may be regarded as phases of the same reaction. In many instances two serum rashes appear at such an interval as to justify the term *double serum rash* and to suggest two separate reactions which might be supposed to be the result of injections on different days. A number of Currie's cases also bear this interpretation; [illegible] is shown by the second of the following cases. It is not [illegible] and the occurrence of two or three distinct rashes after a single injection of serum is now thought to be due to the successive appearance at different time intervals of sensitiveness to the different proteins—globulin, pseudo globulin and albumen—present in horse serum (Dale and Harthey).[2]

After intrathecal injections on the third, fourth, and sixth days of the disease there was an erythematous rash on the eighth day which faded on the ninth and reappeared on the eleventh. On the eighteenth day there was a recurrence of the rash. In another case a long lasting scarlatiform rash followed the administration of serum on one day only, the second day of the disease, with intrathecal intravenous and hypodermic injections were given. Serum rashes appeared on the tenth and on the twenty-fifth days.

There is another rare grey of double serum rashes, which in a chronic case an urticarial serum rash occurs and subsequently after a period during which no serum has been given and anaphylaxis has developed a further injection is followed by the rapid appearance of a rash.

A man had a serum rash seven days after he first had serum; thirty-six days later no serum had been injected for twenty days, a further injection was given followed next day by an immediate serum rash without constitutional symptoms of anaphylaxis. In a second and similar case there were serious constitutional symptoms and a hemorrhagic rash (see p. 33).

The quantity of serum administered had very little influence in inducing a serum rash; this appears to be contrary to the general experience. Among 78 cases that had Dublin's serum only, and tabulated —

[illegible] (1910) [illegible] from 67 to 81 per cent.

[illegible] Dale and Harthey, *B. J. M.* [illegible] (1911) [illegible] 408.

[illegible] than 30 c.c. of serum in 1[illegible] or 78 per cent. had a rash
[illegible] than 30 c.c. and less than 100 c.c. and [illegible] or 79 per cent. had a rash
[illegible] than 100 c.c. and less than 150 c.c. and [illegible] or 87 per cent. had a rash
[illegible] more than 150 c.c. and [illegible] or 65 per cent., had a rash

[illegible] found by Currie[1] that in injection of anti-diphtheritic [illegible] serum rash due to a previous injection might be [illegible] to determine the appearance of a rash which otherwise would [illegible] Examination of the notes does not show that the [illegible] in cerebrospinal fever. It is true that in a few [illegible] and the injection of serum have been performed the [illegible] rash appeared there having been a previous interval [illegible] the administration of serum. But such cases are [illegible] satisfactorily explained by the view that the symptoms of [illegible] which led to the lumbar puncture and the injection [illegible] premonitory of the serum rash (*post infra*).

[illegible] of the serum included the serum rash and in [illegible] or transient albuminuria. In a fourth case the eyelids [illegible] In 3 cases pains in the joints accompanied or followed the serum rash and in one of these there was a double serum rash (on the seventh and twenty second days after the first injection) and each eruption was associated with arthralgia. In 6 cases the serum rash was followed, usually after an interval of four days, by synovial effusion, commonly in the knees or wrists, sometimes but not always painful. This well known association of erythematous eruptions and joint symptoms suggests [illegible] change in both situations. In one case a painless effusion into the left knee joint occurred seven days after the first injection of serum although there was no rash. The rash may be accompanied by fever and [illegible] of the lymphatic glands.

In 9, or 1·5 per cent., out of the 18 cases the serum rash was preceded [illegible] accompanied by a recrudescence of meningeal symptoms which were [illegible] by lumbar puncture. This manifestation of serum disease well [illegible] by Nettler and Debre[2] appears to be peculiar to the intrathecal [illegible] and its mechanism may perhaps be elucidated by analogy. The [illegible] of the mucous membranes originally attacked by diphtheria to [illegible] the time of the subsequent serum reaction may be shared by the [illegible] in cerebrospinal fever, and it may be suggested that the [illegible] show a change corresponding to the rash and œdema which [illegible] begin around the site of a hypodermic injection of serum. [illegible] meningeal irritation or meningism can be distinguished from [illegible] of meningococcic infection by examination of the cerebro

[1] [illegible] *Hygiene*, London, 1907, vol. [illegible], p. 5.
[2] [illegible] Debre, [illegible] cerebrospinale, p. 484, Paris, 1911.

[illegible] (relapses) [illegible] has been [illegible] L. Ward [illegible] Edinburgh [illegible] been [illegible]

Out of [illegible] serum [illegible] 7 [illegible] fatal. The [illegible] these total cases [illegible] the extreme [illegible] has (in 2 cases) [illegible] longest [illegible] days). Nude [illegible] rash and [illegible] (Pulmals and [illegible] rash and 8 cases in mutual rash [illegible] serum rash (doubtful in [illegible] instances) in this [illegible] cases the skin [illegible] presumably prone in [illegible] special degree.

Cause [illegible] due to lumbar puncture and the intrathecal injection of serum [illegible] and should not occur if the obvious causes be avoided. The risks may be divided into those (1) due to increased intracranial pressure.

A man on the third day of the disease had lumbar puncture for the third time [illegible] of fluid not under pressure being removed. 40 c.c. of serum was given and respiration stopped. Artificial respiration was followed by improvement, but died two hours later. At the necropsy the lateral ventricles were distended with purulent fluid. A man on the second day of the disease was lumbar punctured for the first time and 30 c.c. of turbid fluid removed. 30 c.c. of serum was given intrathecally and he collapsed with respirations of 10 and a pulse of 120 per minute. Artificial respiration was followed by recovery. During the second year of the war there were three cases of this nature.

(2) due to anaphylaxis.

On the forty eighth day of the disease not having had any serum for twenty seven days a man had an intrathecal injection of 20 c.c. seven hours later he vomited had a purpuric rash and was gravely ill. Next day the rash had faded but the right knee was full of fluid. He died seven days after the injection.

(3) due to infection through the lumbar punctures.

After thirteen lumbar punctures and the intrathecal injection of 240 c.c. of serum a man was on the twenty ninth day of the disease found to have a swelling resembling a hematoma over the lumbar spine. Incision next day gave exit to blood stained fluid and some debris. Death occurred suddenly next day. As there was no necropsy the nature of the infection was not determined.

In one case lumbar puncture without injection of serum was followed by pain and tenderness in the course of the left sciatic nerve and some wasting of the limb.

[illegible] Nov. to serum [illegible] 1917 [illegible] 1906).

[illegible] the [illegible] 1905 [illegible] 822.

[illegible] Cerebrospinal Fever at Naval Centres

The Portsmouth District

[illegible] deaths, or 33·6 per cent were reported from this area [illegible] months (or 28·7 per cent) in the second and 36 (19 deaths [illegible] first year of the war. In the first three years of the war [illegible] in this district 110 cases of cerebrospinal fever or 26 per [illegible] cases in the Navy as compared with 91 (12·5 per cent) [illegible] 17 (11·7 per cent) in the Chatham District, 19 (14 per [illegible] 10 per 26·6 per cent) at Shotley and 42 (10 per cent) [illegible] the 110 cases there were 42 deaths (38 per cent) out [illegible] among the 117 cases in the Navy. The 46 cases [illegible] Naval Barracks (36) from the Royal Marine Artillery Barracks [illegible] Lobatoki Camp (3) Royal Marine Light Infantry Barracks [illegible] on (1) and Calshot Air Station (1).

[illegible] in the Royal Navy in this district was October 1 [illegible] Nov [illegible] (2 deaths) January 8 (4 deaths) February 12 (3 deaths) [illegible] April 1 (0 death) May 1 (recovery) and June 2 (0 [illegible] M O H for Portsmouth has kindly given me the [illegible] the civil population from August to December 1917 [illegible] February 13 March 17 April 8 May 5 June 1 [illegible] compared with 15 in the Navy in both series almost [illegible] the cases occurred during the first three months of 1917 [illegible] were the highest incidence of Naval cases in the [illegible] in March. During the three years of the war January [illegible] March (30 cases) provided three quarters of the cases [illegible] highest incidence being April (9 cases). The 46 cases were [illegible] Naval Hospital Haslar by Staff Surgeon G P Adshead [illegible] Flexner's serum and 3 (2 deaths) received Mulloy's serum [illegible] cases (5 deaths) had subcutaneous as well as intrathecal injections of [illegible]

The following information has [illegible] provided by Hon Staff Surgeon P Fildes M B, R N V R. Among 10 [illegible] men entrants studied there were 166 or 3·3 per cent carriers the months [illegible] December (3·6 per cent) January (5·4), February (1·8) and March (3·8) showing [illegible] above the average. Among 1 350 contacts there were 112 or 8·3 per cent carriers 101 of which were detected in the months December to April and 81 in January, February and March. In the second year of the war there were no carriers among 2 022 new entries studied and among 603 contacts 15 or 4·1 per cent carriers. No case of carrier going sick with the disease or of a contact developing the disease within ten days or of a case due to contact with a carrier has been detected. With regard to the occurrence of Gordon's four types of meningococci there was a predominance of types I and III until late in February after which there were [illegible] cases only. Types II and IV maintained a high level until the end of March when there was a fall followed by a steep rise in May and June after which there were sporadic cases only. There was no outstanding predominance of any type among the cases of cerebrospinal fever but it is noteworthy that type I persisted longer among the cases than it had ceased to appear among the carriers. The results of a comparison between the clinical manifestations and the presence of the various types will be published by Staff Surgeon G P Adshead. The carriers were segregated and experiments with various antiseptics were tried chloramine T 1 [illegible] spray in inhalation and also nasopharyngeal spray) flavine 1 in 500 (nasopharyngeal spray) carbolic acid 1 in 200 and permanganate

[illegible] Medical Bdn. Lond. 1917 vol ii p 602.

of pu[illegible] Rou[illegible] sterile [illegible] treatment [illegible] as [illegible] spe[illegible]

[illegible] occurr[illegible] sliding th[illegible] Navy [illegible] of the [illegible] barrack [illegible] (10 per cent [illegible] 10 per cent [illegible] 59 (14 per [illegible]

The first [illegible] on October [illegible] who had b[illegible] and on Nov[illegible] During [illegible] 8 cases all [illegible] the same mes[illegible] than four [illegible] and in adjacent [illegible] cases arose in [illegible] and on March [illegible] had cases on [illegible] an overflow sham[illegible]

The Royal [illegible] on Isbourne [illegible] who had been [illegible] rapidly fatal [illegible] four days before [illegible] first three years [illegible]

The Royal [illegible] these barracks [illegible] borne on the [illegible]

Hasler City for [illegible] and 31. On [illegible] sick with the [illegible] January 31 an [illegible] After this no [illegible]

[illegible]

Thirty six cases [illegible] depot, as compared with [illegible] 30 cases (11 deaths [illegible] first three years of the [illegible] deaths at this depot [illegible] Royal Navy. [illegible] among the boys in the [illegible] drawn from the Royal [illegible] Powerful (3) [illegible] neither of whom [illegible]

The monthly incid[illegible] as follows: [illegible] January 10. [illegible] previous [illegible] four cases were [illegible]

[illegible]

[illegible] cerebro-spinal [illegible] Of the [illegible] cases [illegible] also one [illegible] (facial) [illegible] The [illegible] Of the [illegible] Flex[illegible]

The [illegible] 1917 [illegible] 1918 [illegible]

[illegible]

[illegible] compared with [illegible] years of the war the [illegible] in the Navy was comparatively [illegible] (10 per cent) at Chatham [illegible] Depot.

The first case [illegible] three abdominal attacks [illegible] was no further case until December [illegible] meningococcal [illegible] developed the disease [illegible] not in the same mess at the [illegible] had also [illegible] developed cerebro-spinal [illegible] on December [illegible] fellow ship [illegible] Eclipse prevent risk with the disease. After [illegible] days the 6th case occurred on January 10 the source of [illegible] on January 11 and 12 there were [illegible] case and on January 13 two cases in adjacent messes occurred [illegible] on as the fourth case. On the same day the fourth case appeared [illegible] on January 11 had left the Isolation Hospital Haslar [illegible] on December 31. After an interval of twelve days the eleventh case [illegible] the Eclipse in a new entry from days after joining the Service [illegible] that it was free from meningococcus. On January 27 the 12th case [illegible] the same room as the fifth, sixth and seventh cases and on January [illegible] in a room which had previously been free from infection. [illegible] twenty eight days the fourteenth case appeared on February [illegible] had not had any contact. On March 1 and 2 cases occurred in adjacent messes in a room not previously infected. The seventh case on March [illegible] in the same room as the 6th case. On March 10 and [illegible] in rooms previously free from the disease. The twelfth case on April 11 was a man found dead in his hammock, who as far as was known had [illegible] in contact with any carrier or case of the disease. On April 16 and May 1 the twenty first and twenty second cases occurred in new entries [illegible] had been with the same overflow ship [illegible] the preceding case. On May 30 and 31 two Canadians who landed on April 17 with forty nine other Canadians [illegible] were found to be carriers without [illegible] the disease, their throats had been swabbed and found to be negative soon after [illegible] at the depot. As there were 2 cases of cerebro-spinal fever in the hospital between April 1 and May 31 and these men had had local leave it is possible [illegible] infected in this way.

[illegible] Lancefield establishment [illegible] cases with 2 deaths or 40 per [illegible] compared with 7 (no deaths) in the second and 2 (no deaths) in the first [illegible] war. No case occurred until December 1 1916 the last previous case [illegible] appeared on April 29. The case on December 1 which proved fatal was [illegible] of 4 cases occurring between December 1 and 7 and equally divided [illegible] March 1 and February 11 [illegible] the other 3 which all recovered [illegible] with fever and meningitis symptoms none of the 5 were

[illegible] ugoro [illegible] [illegible] [illegible]

Hexec s serum [illegible] was the only serum gi[illegible] [illegible] 6 cases [illegible] in Lister Institute multivalent serum. Boroughs Well[illegible] Case o M[illegible] serum. In so e of the lat[illegible] and prolonged case [illegible] canal was [illegible] oil with saline solution before the serum [illegible]

During the third year [illegible] the Staff Surgeon T. H. Burdett from bacteriological examination of [illegible] new entries found 311 carriers or 1 3 per cent the highest recorded being in March and April. Out of 1 644 contacts there were 13 carriers [illegible] per cent.

Royal Naval Hospital Chatham.—There were cases as compared with [illegible] during the first year of the war. In the first three years of the war [illegible] therefore 12 (or 10 per cent) cases out of the 117 [illegible] the Navy [illegible] Chatham 66 (56 5 per cent) in Portsmouth Barracks, 13 (11 per cent) in Devonport Barracks and 10 (11 per cent) of the Crystal Palace.

The first case occurred on September 28 1916 in a stoker who had had pneumonia two months previously. On December 18 there was a second case in a ship's steward's assistant who had joined the Navy three weeks before while he had a relapse for meningococci. On January 5 a case occurred in a man who joined the isolation camp on St Mary's Island on January 1 from the Crystal Palace where he had been on sick hospital duty and on January 11 a case of first infection appeared. On January 11 a man who joined the Service the day before went sick with the disease. The last case of February 1 was in an officer's servant.

Royal Marine Light Infantry Barracks Hythe.—On February 2 the son of a senior sergeant, aged 11 years was received for treatment and bacteriologically proved to be suffering from meningococcic meningitis. On February 8 a fourteen year coloured aged 15 years contracted the disease.

Chatham Dockyard.—A Naval apprentice went sick on March 11 with sore throat at first thought to be diphtheritic but later admitted to hospital on April 3 he was unconscious and died six days later.

Royal Naval Hospital Chatham.—A stoker admitted from a northern base on September 7 for haemoptysis developed the disease on September 22. This was the first case to be treated in the hospital during the third year of the war.

Crystal Palace

At this depot there were 18 cases with 8 deaths or 44 per cent as compared with 5 cases (3 deaths) in the second and 13 cases (21 deaths or 61 6 per cent) in the first year of the war. During the first three years of the war 59 (14 per cent) out of the 417 cases in the Navy occurred at this depot. The largest number (7) of cases occurred in March in the second year of the war the least incidence was in February (11) and March (10).

As in the two previous years of the war treatment was carried out at the Grove Road Hospital and I am indebted to Drs R. S. V. Clark and H. Major for the notes of the cases. One of the cases died before admission and [illegible] within a few hours. As intravenous serum was not given to any of the cases a few words may be said as to the treatment adopted. All the cases were treated by lumbar puncture in addition 8 were given sotalin (3 gr.) intravenously and large doses of opium (20 gr.) by the mouth. These were not [illegible] in rapidly fatal cases and [illegible] reported on of the total cases in [illegible] had a stock vaccine. One case (recovered) had one dose of gelatine and [illegible] antiseptic only. Of the six cases treated by lumbar puncture alone 3 died in the two days of the onset. The administration of the large doses of

quant [illegible] was [illegible] Dr Major Eight patients [illegible] or arsinoeths of these 4 [illegible] as well

The [illegible] had been thus weeks [illegible] and [illegible] home [illegible] mentioned [illegible] one of [illegible] the third [illegible] January [illegible] and on [illegible] days [illegible] seve [illegible] All the cases [illegible] March [illegible] the same [illegible] the [illegible] seventh [illegible] March 13 [illegible] On March [illegible] on June [illegible] the sixth [illegible] and on the [illegible] eighteenth [illegible] occurred on [illegible] ninth case [illegible] February [illegible] March [illegible] the cases [illegible] presence of [illegible]

Between December 4 [illegible] General P W Bissett Smith [illegible] 19 5 per cent [illegible] 11 but deaths [illegible] of carriers [illegible] March the percentage [illegible] to 9 it rose in the middle of March [illegible] reached its highest point [illegible]

[illegible]

There were [illegible] (4 deaths) in the [illegible] 17 [illegible] out of 26 cases 9 per cent [illegible] war [illegible] 17 per cent [illegible] 42 9 per cent [illegible] one from [illegible] sweeper [illegible]

The first case in August [illegible] Surgeon T D Hickey [illegible] was forthcoming [illegible] the diagnosis being established after [illegible] fluid On December 5 another case [illegible] on December 23 in a boy who [illegible] University College Hospital, London [illegible] the fifth case which was complicated [illegible] there were 30 cases in the neighbourhood [illegible] a boy who joined on March 14 from the [illegible] the first half of February in the class [illegible] carrier (*vide* also p 37) On May 14 [illegible] clinically but not so proved bacteriologically [illegible]

[illegible] *in the Royal Navy*

[illegible] complain [illegible] night before [illegible] and headaches [illegible] to [illegible] case of [illegible] convalescence [illegible]

Five cases were treated in the medical department of Gosport [illegible] [illegible] of the [illegible] spread [illegible] per cent [illegible] In addition [illegible] and seven in [illegible] officers [illegible]

[illegible]

[illegible] bacteriologically [illegible] cases were reported [illegible] instances more than [illegible] case occurred in the same ship [illegible] transport taxor [illegible] case in the same voyage and in other voyages [illegible] these were [illegible] Tonus two cases cured in thin three days [illegible] in the Channel [illegible] with an interval of [illegible] two days

The cases recorded in the Calburnian (August 14 [illegible]) Temerarre (September 10 S.S. Wiesbaden (October 13) Calabria (October 31) Valiant (November 18) Calais (November 28) Mercury a mine sweeper (December 13) HMS Sidmam (January 31) Southampton (April 11) from Hooker Campbeltown (May 8) Vanguard (February 7 [illegible]) Surprise (March 13) Ajax (March [illegible]) Cumbrian (April 11) [illegible] (May 6 8) Orion (June 13) [illegible] (July 10 13) and [illegible] (July 17) The average age of the infected cases was 20 5 years of the fatal cases 20 1 years and of the fatal cases 20 5 years Out of the twenty cases 6 or 30 per cent proved fatal as compared with [illegible] out of 10 during the second and 8 out of 12 during the first year of the war Thus among 117 cases during the first three years of the war 12 of 10 per cent occurred in sea going ships but in four instances only were there more than one case in the ship Among those 42 cases there were 19 deaths or 45 2 per cent as compared with the 13 9 per cent mortality for the 417 cases

Other Places

Two cases occurred in different depot ships in Rosyth Dockyard on April 8 and May 3 and were treated in the City Hospital Edinburgh Isolated cases also occurred in a depot ship at a Northern base on January 5, at a Royal Naval Air Station in Yorkshire on February 18 and at Folkestone on September 11

In addition to the medical officers incidentally mentioned I beg to express my sincere thanks for courteous help and information to Surgeon General W W Pryce Deputy Surgeons General R Hill, C V O, P M O of the Grand Fleet W Bett M V O Fleet Surgeons A MacLean, D S O W H S Stalkartt, A R Baulkart C V O J T Jones H S Burniston W MacLeod J A Campbell R M Richards W I Mutan Surgeon J R Adam Temporary Surgeons J P Berry B A Playne D S O F I Tongue and A Vince

WATER BOATS, WITH THE SUPPLY OF FRESH WATER FROM THE SHORE TO H.M. SHIPS

[illegible]

[illegible] H.M. ship [illegible] possible and it was [illegible] water was made [illegible] with increased [illegible] water on board [illegible] and the change [illegible] still [illegible] states "that the [illegible] advance in [illegible]

Since the [illegible] increasing [illegible] such is light [illegible] larger ship [illegible]

When using [illegible] (1) [illegible] ditions both [illegible] and [illegible] of the distilling [illegible] ship

These [illegible] the amount of [illegible] But such a [illegible] directed [illegible] is only mentioned [illegible] All measures involving [illegible] stinting of the fresh water supply on board [illegible] ships should [illegible] possible avoided. War [illegible] ships [illegible] than [illegible] the homes of the personnel [illegible] supply is [illegible] necessary for maintaining the health of officers and men [illegible] distilling plant.

If it is necessary then to economize in fuel and save machinery as much as possible water must be obtained from the shore. For this purpose water boats are required and in view of the long [illegible] these now employed it different Naval bases a short account of their features may be of interest to readers of this Journal.

There is very little mention of this type of craft in literature. Gatenford alludes to the water boat chiefly to deprecate its use as a means of limiting water to ships and tells us only that water should never be taken from those which are made of wood and act as tanks as such are very difficult to keep clean and liable to be contaminated with sea water by leakage.

As already mentioned the use of water boats will tend to economy in fuel and save machinery. This method of supply is also cheaper. It has

[illegible] when compared with the use of water [illegible]

[illegible]

[illegible] pollution

[illegible] have always to [illegible] against it [illegible] vessels of such [illegible] with ordinary [illegible] careful supervision [illegible]

[illegible] difficult to give a succinct [illegible] point of view however [illegible] and so on description will [illegible]

[illegible] Admiralty vary in size from [illegible] greatly. Often however [illegible] Naval bases a very efficient [illegible] These tanks may be divided [illegible]

[illegible] independently of the hull [illegible] the tanks

[illegible] divided— 0 per cent [illegible] having the tanks [illegible]

[illegible] two larger Admiralty [illegible] appointed [illegible] with Group B, with [illegible] option [illegible]

[illegible] mentioned briefly at this [illegible] tank [illegible] vessel in which [illegible] and the risks of [illegible] of the drinking [illegible] Such leakage of [illegible] undesirable but [illegible] the [illegible] pollution by the exercise [illegible] ship

[illegible] that on [illegible] may [illegible] work in [illegible] that they [illegible] alongside [illegible] that it is possible that the hull of [illegible] engaged [illegible] injury or strain [illegible] pollution of the water [illegible] however [illegible] pollution has taken place [illegible] ships [illegible] carefully [illegible] The [illegible] may [illegible] of pollution from [illegible] sufficiently [illegible] water [illegible] of a [illegible] type. The tank how-

[illegible] water [illegible] connected [illegible] the ship [illegible] by an [illegible]

Tanks

As stated [illegible] the tanks from the [illegible] the most important parts of the wine [illegible] them now.

The tanks are practically all built [illegible] small enough to be type cumbersome [illegible] are wooden but those [illegible] they are more difficult to keep clean [illegible] ing of contents [illegible] To keep the tanks [illegible] should always separate them from such [illegible] boiler rooms. This objective is well attained [illegible] tanks—convertible tanks—where tanks [illegible] engine room aft and pump room forward [illegible] steel tanks which are complete—[illegible] not [illegible] water boats are nearly all rectangular in shape [illegible] In a very few cases the tanks are cylindrical [illegible] suitable for storage and transport of [illegible] coating to protect the surface of the steel [illegible] water boats we find the following methods [illegible] cement washing (3) coating with rosbonit.

Galvanizing.—This process is not used [illegible] fly-[illegible] some of the smaller carriers such as [illegible] from 16 to 20 tons of water in small tanks. The [illegible] the steel with zinc. Galvanized tanks last well [illegible] long periods but they are expensive and the [illegible] from shipping water issued from them though [illegible] bore in mind. Another objection to the [illegible] sources of this metal blende (ZnS) is usually [illegible] (PbS) is that zinc often contains traces of [illegible]

Cement Washing.—This is a good [illegible] most in use in our water boats. The [illegible] of the tank is cleaned as possible [illegible] aid of wire brushes. The cleaner the steel [illegible] cement coating last. After scraping and washing [illegible] cloths to remove all dust, the first coating of [illegible] applied. A cement wash is obtained by using one part of cement with two parts of water. When this is thoroughly dry a second coating is put on and when the latter is dry the process is completed by applying a coating of limewash. This wash should always be freshly made by adding one part of slaked lime to four parts of water and mixing thoroughly. It acts as a disinfectant and gives a clean white appearance to the tank but is soon removed by the water leaving the usual grey colour of the cement

[illegible] remain [illegible] The soil and [illegible] water [illegible] quickly than [illegible] harder [illegible] waters

[illegible] [illegible] roshonite [illegible] and when [illegible] surface [illegible] It is very [illegible] [illegible] A [illegible] preparation [illegible] This [illegible] a varnish made of a coal tar pitch resin [illegible] employed in the [illegible] of pipes for water mains Thus, [illegible] to be applied at a very high temperature Roshonite on [illegible] and can be used at the ordinary temperature and this is [illegible] advantage As in the [illegible] process the tanks are first scraped [illegible] the surfaces made as smooth as possible before the roshonite [illegible] After some months [illegible] varnish scums forms on the surface [illegible] easily removed with the help of clean boiled cloths and clean [illegible] and it is a good plan to wash down in this way every six months [illegible] to the sides of tanks which have been coated with this preparation Although roshonite is made use of in most of the storage tanks of H M [illegible] its use in our water boats is not so general

A properly constructed tank should be provided with a manhole filling [illegible] vent and suction pipe

The manhole is necessary for cleaning and inspection purposes and is [illegible] frequently used for filling purposes It should be so situated as to be [illegible] accessible and is placed commonly on the top of the tank with the [illegible] vent and filling pipe In a very few cases we find it on the side, the advantage of such a position being that there is less risk of dirt and dust [illegible] the tank when the manhole is opened This risk is however [illegible] to a minimum by fitting where possible 'raised' manholes The [illegible] flush with the tank, with its cover held in position by numerous [illegible] should be avoided Its disadvantages are obvious These are [illegible] being replaced by the raised type fitted with hinged watertight [illegible] held in position with butterfly nuts The coamings of these man[illegible] should be at least six to eight inches high In tanks so fitted filling [illegible] are unnecessary as the covers can readily and safely be opened a few [illegible] to admit the hoses

Filling Pipe —This is not always necessary but is essential in all tanks which have the old type of 'flush' manholes Such manholes must be [illegible] as seldom as possible and, before opening the cover and the upper [illegible] of the tank around should be carefully cleaned All filling pipes should be fitted with caps which should be attached by chains so that they may be always at hand and ready to be placed in position when the apparatus is not in use

Air vents — Suitable air vents are required not only for ventilation purposes but in those tanks in which filling pipes are in use to allow of

[illegible] scope of [illegible] tanks are [illegible] possible the [illegible] tapped. The [illegible] ways out the [illegible] [illegible] [illegible] [illegible] formed [illegible] [illegible] [illegible] into the tank [illegible] the water [illegible] the [illegible] pipe leading [illegible] open.

Suction Pipe.—Where the [illegible] system branch pipe passes from the [illegible] pipe which leads to the pump. [illegible] that tank can be shut off when [illegible] heat. These pipes are absent and water [illegible] manholes and passing through [illegible] which lead from the pumps. This method [illegible] to the risk of pollution of the water. [illegible] in these carriers.

Mention may be made here of sounding [illegible] certain occasions [illegible] should, however, be always [illegible] when not in use it is important to see that they [illegible] ing them with some form of cover. A good [illegible] having a sufficient length of [illegible] times [illegible].

The filling pipes [illegible] is sounding [illegible] these are absent we find special sounding [illegible] screw caps.

Hoses.

After the tanks the hoses are [illegible] the water-boat and great care must be [illegible] employment and disposal after use. At [illegible] the standpipes on the posts [illegible] the charge of watermen. At this [illegible] which are kept on board the water-boat.

We find three kinds of hoses [illegible]

These made of canvas are [illegible] on the whole very satisfactory. With instant [illegible] however they soon wear out and [illegible] types of couplings are met with the [illegible] Nunan and Stove. The latter is which [illegible] instantaneous lock principle [illegible] cap fitting either end—and generally [illegible]

Canvas hoses after use should [illegible] the brass caps now supplied should be [illegible] hoses be left lying about on the decks. The [illegible] almost entirely to the small drifts [illegible]

watering the [illegible] are supplied with small wire-bound [illegible] They are very durable and [illegible] these smaller carriers have [illegible]

Leather has [illegible] expensive and difficult to maintain [illegible] equipping them in [illegible] water is [illegible] that keeps them soft and pliable but it [illegible] time [illegible] and dust on the outside is partially [illegible] through the [illegible] water to the inside After [illegible] it the deck These hoses are [illegible] water-boats [illegible] drinking water should always be kept [illegible] for other purposes and should have [illegible] such distinctive mark as [illegible] they may be [illegible] for drinking water [illegible]

Pumps—Two main types of pumps are employed one in which the [illegible] by a piston working in a cylinder—the ordinary suction [illegible] in which it is produced by a fan—the centrifugal pump The latter is the one generally found in our water-boats [illegible] pass [illegible] the pump [illegible] the [illegible] connections on deck These, [illegible] should have caps attached

[illegible] point however with regard to the pumps from the Medical Officer's point of view is to see that the drinking-water pump [illegible] this purpose only This is especially important in the case of [illegible] water boats—the converted [illegible] already mentioned—each [illegible] one pump only on board [illegible] of such boats must be [illegible] to use the pumps and connections for anything but drinking [illegible] In order to this effect should be placed upon the hose connections [illegible]

Personnel—Having considered the more important points in the [illegible] the water boat bearing directly on the reception, storage [illegible] the drinking water it is necessary now to say a few words [illegible] personnel on which the efficient working of the boats depends

One of the most important factors here is to exclude typhoid and dysentery Men who have suffered from either of these diseases should not be passed for water boat service unless we have been able to prove, by frequent bacteriological examinations of the excreta, that they are no longer possible carriers

In all our water boats simple rules are posted up for the guidance of the men These emphasize the importance of cleanliness both of the ship and of themselves and draw attention to the more important points in their daily routine Those engaged in handling hoses are encouraged to wash their hands frequently with soap and water For tank cleaning purposes canvas suits or overalls are provided These are kept for this work only and should be disinfected before use either by steam disinfection if available or by boiling

[illegible] carried [illegible] men [illegible] adds [illegible] risk of [illegible]

The [illegible] of the [illegible] to the [illegible] of the [illegible] apply [illegible] to have [illegible] of the disinfectant [illegible] [illegible] the [illegible] afterwards [illegible]

The men must keep their [illegible] paid to their clothes and bedding.

With regard to the [illegible] flushing arrangements should [illegible] this is not always feasible [illegible] also the pail closet [illegible] clean. In the rules [illegible] are to be scrubbed [illegible] as far as possible from the [illegible] dogs or other animal pets [illegible]

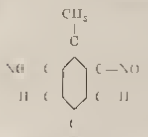
In concluding [illegible] made of another type of water [illegible] — now [illegible] A certain number of [illegible] in the peaks. This water [illegible] supply [illegible] various [illegible]

[illegible] regulations [illegible] the [illegible] and care of the [illegible]

Special hand pumps [illegible] always made use of [illegible] is slow and somewhat laborious [illegible] water is being supplied by the [illegible] of pollution. Speaking generally [illegible] efforts to prevent pollution [illegible] for our water boats.

[illegible] DERMATITIS

[illegible] under the irritating [illegible] in the Pres[illegible] in the habit of [illegible] know that it [illegible] and that [illegible] felt in cuts [illegible] hands [illegible] that [illegible] tals



[illegible] ordinary to [illegible] the benzene group [illegible] and this property is probably [illegible]

[illegible] soluble in hot water [illegible] all the [illegible] its effect it is [illegible] Service is concerned [illegible] is the presence of [illegible] responsible indirectly for cases of dermatitis [illegible] present and under certain conditions exudes [illegible] from the filling cap and central tube of [illegible] of the armourer [illegible]

[illegible] yellow and the [illegible] skin is slightly [illegible] and cracks [illegible] considerably as [illegible] vast majority of persons [illegible] further [illegible] dermatitis results [illegible] have been with [illegible] Air Service for nearly two years and only [illegible] come under my notice in the unit itself [illegible] than I imagine suffers to some extent [illegible] squadrons tells me that during heavy work [illegible] filling up machines may be affected in as [illegible] of six. These cases however are slight and [illegible]

The dermatitis starts as a finely papular rash with a good deal of erythema and a distinct tendency to vesiculation. It shows a preference for the lower part of the flexor aspect of the forearms, but it spreads upwards and downwards to the extensor surface, the extension of the hand and the fine skin between the fingers. The patient's skin is very fair and shows yellow staining only is a rule. The skin of the thighs, being covered by clothing, escapes. Constant bathing in hot water is always complained of and scratching aggravates the lesions. A very mild case which occurred towards the end of October and in which only the forearms, wrist and fingers were affected here sufficient resemblance to the others to warrant my mentioning it especially as medical officers in the Services are always on the lookout for the latter. The man had been employed in the armoury for only three days and the yellow staining on the hands was slight. He did not volunteer any information regarding his work, complaining only of an eruption which itched. In this case the extension to the feature of the rash is worth noting. Even in acute eczema it is harder and rougher to touch than similar eruptions, and this characteristic is more noticeable in chronic cases. In very acute and severe cases vesiculation is marked and oedema may be present. Recently, I was allowed to see two beautiful wax casts in the Dermatological Department of the Royal Infirmary, Edinburgh, which illustrated these points. One was from a patient who had just started making munitions, and the other from a patient who had examined fragments of an enemy bomb. Several cases have been reported from the latter cause, the patients being erroneously regarded as the victims of a new form of gas. Nevertheless the particular compound used by the Germans is more irritating than our own; it is a mixture of trinitrotoluene and hexanitrodiphenylamine. In cases which have become chronic scaly patches occur, and there is less itching. This was the principal condition present in one of my cases. There were irregular round scarcely raised red patches with fine scales on the top. The patches varied in size from a halfpenny, larger than a sixpence.

The diagnosis presents no difficulty provided one can get a history of contact or possible contact with T.N.T. The yellow staining on the hands is an obvious guide. The occurrence of an eruption of the type described on the hands and the exposed parts of the arms would suggest "nitrous dermatitis venenata" or "nitrous occupation dermatitis," and lead to further inquiries. Confusion can only arise in very mild cases.

Treatment.—One point which will strike anyone who treats a case of T.N.T. dermatitis is that the disease does not disappear as rapidly as might be expected after removal of the irritant. The skin seems to take up a good deal of the poison and is more deeply affected than one is led to suppose on first inspection. Moreover, while the disease clears up in most places, it will be found that tiresome rough and scaly patches are left here and there and may persist for several weeks. Some soothing lotion such as calamine should be prescribed for all cases in the first

[illegible] stance and in mild cases nothing more will be required [illegible] 3 drm of zinc oxide suspended in 8 oz of 1 per [illegible] tion The carbolic relieves the itching For the [illegible] already noted I have found Lassar's paste with [illegible] the most effective I have no doubt that many [illegible] as just as useful but I mention those I have used [illegible] frequent sources are naturally rather limited [illegible] general lines to be followed

Conclusion —Having cured the patient the [illegible] employment arises It is well known that a skin which [illegible] susceptible to a specific irritant, remains so and is [illegible] with I recommended that the chronic case, referred to [illegible] transferred to other work and this was done All the other [illegible] then duties after being warned to avoid contact with T N T [illegible] any recurrence of the dermatitis In such [illegible] unusually susceptible and contact with T N T [illegible] is necessary in the R N A S, measures directed [illegible] protection should be successful in preventing the [illegible] mainly on the co operation of management and [illegible]

As already pointed out the delinquescent nitrate [illegible] particularly responsible since it carries the T N T [illegible] if [illegible] the rest is a leak One is justified in [illegible] and bombs should be properly sealed If this is [illegible] the [illegible] should be wiped with waste before being handled [illegible] gloves and sleeves Thick leather gloves [illegible] unless the material must be thin in order [illegible] Surgical rubber gloves would answer the purpose [illegible] operation of unboxing a bomb in which [illegible] is not fitted

[illegible] results but I hope [illegible] will meet the cases which do not [illegible]

We [illegible] bombing is about to play a very [illegible] which means the employment of more men and [illegible] Under these circumstances I think the [illegible] bombing squadrons as well as [illegible] interested in tetral warfare

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AEROPLANE ACCIDENTS

[illegible] H. [illegible] ANDERSON, M. [illegible]
[illegible] R.N.A.S., Air Station
[illegible] *St. Vast, Hospital Toulouse*
[illegible] *Hospital Toulouse*

Aviation [illegible] infancy but it is [illegible] wing [illegible] the present War [illegible] considerable [illegible] years. In the early days of flying [illegible] necessarily many [illegible] owing, firstly and unfortunately [illegible] weakness in the aeroplanes and secondly to the fact that the pioneer pilots had to experiment, and were mostly unacquainted with many of the factors governing aerial navigation. When man began to teach man and as improvements in the construction of aeroplanes increased so accidents diminished in number proportionately, but on the other hand, many more took up flying and the total of accidents was increased. The pre war methods of teaching were slow and sure, and first solo flights were made in stages and after prolonged tuition, thus tending almost to obviate accidents altogether. As the War advanced and the importance of aviation was recognized so more pilots were required and the methods of teaching had to be accelerated. Thus a few hours dual control instruction—three and a half to seven hours—were given and pupils sent off to do their first solo flights. Naturally many more accidents occurred, and as nowadays tuition is on faster and more powerful aeroplanes so have the total number of accidents increased. Every accident teaches something new and all should be investigated thoroughly, so that preventable causes of error can be eliminated in the future. In this connection the reports of the Public Safety and Accidents Investigation Committee of the Royal Aero Club are very instructive and should be studied.

The total number of accidents due to school work and experimental flying is greatly augmented by the number due to war flying, either as the result of aerial duels or anti-aircraft fire from the ground.

Classification of Aeroplane Accidents

An attempt has been made to classify accidents at this Station covering a period of six months, and these are referred to as the "V" series. In a general review of accidents I have also drawn from fifteen months experience whilst at another school and these are referred to as the "E" series. In the "V" series during six months 4,000 hours flying were done consisting of 9,000 flights, and during that time fifty eight aeroplanes were wrecked or crashed. The suggested definition of a crash is an aeroplane so damaged in a flying accident that it has to be deleted or sent in to the workshops for repair or rebuilding. This is in contradistinction to the effects of a bad landing or get off where the ensuing damage is small e.g. broken wires, tail skid or bent axle and can be repaired by the flight mechanics. Fifty-eight crashes in 9,000 flights represents one crash in

[illegible] In these fifty eight crashes [illegible] which [illegible] equivalent [illegible] twenty eight being injured in every [illegible] or one pupil injured in every [illegible] flights From these figures [illegible] that school flying is fairly safe and compares favourably with other [illegible] velocity forms of transit In the table which I have drawn up flying [illegible] have been classified firstly with regard to the cause secondly [illegible] in which part of the flight the crash was initiated thirdly the [illegible] of actual damaging cause e g the ground trees houses [illegible] and fourthly the region or regions injured [illegible] added remarks on the value of the safety-belt safety belt [illegible]

TABLE OF CRASHES

"V" Series (1) *With Injury to Pilot*

No	Number of flight	Cause	Type	Subtype	Region injured	Remarks
1	3rd	Loss of head	Getting off	Collision with ground	Trunk	Belt held
[illegible]	Dual	Unavoidable	Landing	Collision with tree	Shoulder face	
3	8nd	Loss of head	Getting off	Collision with ground	Face	Belt gave way
4	3nd	Brain fatigue	Landing	Collision with ground	Back	
[illegible]	1st	—	—	Collision with ground	Elbow and foot	—
[illegible]	5th	Loss of head	Getting off	Collision with ground	Back	Belt held
[illegible]	[illegible]nd	Error of judgment	Landing	Collision with ground	Wrist	Belt gave way
[illegible]	12th	Loss of head	In the air	Collision with ground	Multiple	Fatal accident belt gave way
7	13 hours	Error of judgment	Landing	Collision with ground	Elbow	Belt gave way forced landing
8	[illegible] hours	Error of judgment		Collision with ground	Wrist	Belt gave way forced landing
9	7th	Loss of head	Getting off	Collision with tree	Face	Belt held
12	2nd	Brain fatigue	Landing	Collision with ground	Back	Belt gave way
13	2nd	Engine defect		Collision with ground	Neck and back	Belt held forced landing
14	7th	Loss of head	In the air	Collision with ground	Face	Belt gave way
[illegible]	7th	Error of judgment	Landing	Collision with ground fire	Arm	

H [illegible]

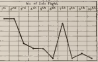
[illegible]

No.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible] judgment	Landing	[illegible] with ground	[illegible]
17	[illegible]			"	Belt [illegible]
18	[illegible]			"	Belt held
19	[illegible]			[illegible] with tree	
20	[illegible]	[illegible]		[illegible] with ground	[illegible]
21	[illegible]	[illegible] of [illegible]			
22	[illegible]	[illegible] [illegible]ment			
23	1st				
24	1st	[illegible]			Belt gave [illegible]
25	1st	[illegible]	[illegible]		Belt held
26	3rd	[illegible]	[illegible]		Belt gave way
27	7th	[illegible]	[illegible]		"
28	7th		[illegible]		[illegible]
29	10th		[illegible]		Belt held
30	20th		[illegible]	[illegible]	Belt gave way
31	7th		[illegible]		Belt held
32	17th	[illegible]	[illegible]		
33	13th	[illegible]	[illegible]	[illegible]	[illegible]
34	7th	[illegible]	[illegible]		[illegible]
35	3rd				
36	4th	Unavoidable	[illegible]	Collision in air with another aeroplane	
37	[illegible]th	[illegible] of judgment	Landing	Collision with ground	Belt gave way
38	7th	[illegible]	[illegible]	"	[illegible]
39	1st				Belt held
40	[illegible]th	[illegible]	[illegible]	[illegible]	[illegible]
41	4th	[illegible]	[illegible]		"
42	1th	[illegible]	[illegible]		Belt gave way
43	9th	Unavoidable		Collision in air with another aeroplane	Belt held
44	8th	Error of judgment		Collision with ground	Belt gave way
45	9th	[illegible]	[illegible]		
46	16th		[illegible]	[illegible]	[illegible]
47	2nd		[illegible]		
48	5th		[illegible]		Belt held
49	After 10 hours		[illegible]	Getting [illegible]	Collision with tree	Belt gave way
50			[illegible]	Landing	Collision with ground	Belt held
51			[illegible]	[illegible]		
52	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
53			[illegible]	Getting [illegible]	[illegible]	[illegible]
54		[illegible]	[illegible]			
55				Landing	[illegible]	[illegible]
56	Instructor	[illegible]	[illegible]	Getting off	Collision with two planes on ground	
57		Unavoidable		[illegible]	Collision with hidden boulder	
58	2nd	Error of judgment		Landing	Collision with ground	

Figures [illegible] red and bracketed refer to the same pilot

[illegible] the frequency of crashes on each solo flight —

[illegible]	[illegible]	[illegible]	Total
[illegible]	1	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1
[illegible]	[illegible]	[illegible]	4
[illegible]	[illegible]	[illegible]	1
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	1
[illegible]	1	1	1
Total	[illegible]	[illegible]	[illegible]



The above chart shows a greater frequency of crashes on the first and second solo, then a diminution from the third to the sixth inclusive and a rapid rise again on the seventh. The inference suggested is that by the time the pupil arrives at his seventh solo he often becomes over confident and possibly careless.

CAUSES OF AEROPLANE ACCIDENTS

The causes of aeroplane accidents are as follows —

(1) Defect in the aeroplane.
(2) Error of judgment in flying.
(3) Loss of head.
(4) Neglect of small things.
(5) [illegible]
(6) Physical illness.
(7) Unavoidable causes.

H. G[illegible]

[illegible] of the fifty-eight [illegible] in the [illegible] ing [illegible] frequency of [illegible] —

	Number of [illegible]	
	Wi[illegible]	Wi[illegible]
1. [illegible] defect	1	0
[illegible]		
[illegible] failure		
[illegible] judgment	1	8
[illegible] head	6	1
[illegible] fatigue	3	1
[illegible]	0	[illegible]
[illegible] illness	0	[illegible]
[illegible]	1	[illegible]
Totals	[illegible]	[illegible]

[illegible] *[illegible] plane.*—This [illegible] the aeroplane and [illegible] and (*b*) engine failure.

(*a*) In the early days of aviation [illegible] the aeroplane, [illegible] fairly common and was [illegible] the present time very few accidents are due to [illegible] experience with the R.N.A.S. I have not [illegible] the air. In one case in the F[illegible] series [illegible] and caused the aeroplane to nose dive with [illegible]

(*b*) Engine failure, *per se* may be [illegible] dent for example if the engine fails just [illegible] ground and there is unsuitable landing [illegible] and the pilot has not sufficient height [illegible] example in landing, if the pilot finds [illegible] undershot or overshot the mark and [illegible] respond to carry him on further to suitable [illegible]

On the other hand engine failure may [illegible] be a strong contributory or indirect [illegible] the engine fails in the air a forced landing, [illegible] height—2,000 feet or more—the pilot can [illegible] good half to landing and arrange his descent accordingly. Of [illegible] approach the field to land it may be found not [illegible] as imagined from greater height e.g. sloping ground long grass [illegible] and thus the pilot may make an error of judgment on actually landing. This quite often occurs with a pupil but rarely with an experienced aviator who knows exactly how to "pancake" his machine. But even in the case of experienced aviators engine failure just after leaving the ground is a serious

[illegible] the real [illegible] in flying. Authorities [illegible] aeroplane accident [illegible] engine failure [illegible] and when the pilot tries to turn back to his [illegible] height with the engine and in turning to spring [illegible] flying speed—stalls—and the aeroplane falls to the ground out of control. In the "V" series [illegible] was the direct cause in one case and was a contributory [illegible] in the crisis.

Errors of Judgment.—Errors of judgment in flying is the commonest cause of aeroplane accidents. This error may occur in getting off the ground or in the air or on landing. Of the fifty-eight crashes in the "V" series this cause accounted for forty-two—four in getting off the ground and thirty-eight on landing. Of the many examples of error of judgment in flying perhaps the commonest is when on landing, the pupil misjudges his distance from the ground and either flattens out too soon and pancakes with possible crash depending on the height or else flattens out too late and strikes the ground at a varying angle usually over turning and wrecking the machine. Other examples in the air are putting on too much bank with insufficient rudder or vice versa, climbing on a turn and as in engine failure prolonging a glide so that the machine loses flying speed. It is difficult to estimate and account for these errors of judgment. In some cases it may be due to under instruction. In other cases even after prolonged instruction the pupil may still misjudge distances and on examination one occasionally finds that the pupil's standard of vision is below normal but on the other hand the pupil may be found to be physically fit to have normal vision and good balancing power. In the latter cases it may be a question of delayed reaction times, especially the visual reaction time on which the aviator is so much dependent. Normally this takes $\frac{1}{10}$ or $\frac{1}{20}$ of a second. It may be delayed by fatigue drugs and excesses but on the other hand in some individuals who are otherwise physically fit it is found to be much slower than in others. This raises the interesting point that in the selection of candidates for aviation the visual and other reaction times must be up to the normal standard. By the French medical authorities on aviation, [illegible] are inferior if the reaction times are found to be of the delayed type.

Loss of Head.—Loss of head occurs fairly frequently in a greater or lesser degree and accounts for a fair proportion of accidents—seven in the "V" series. The pupil in his new occupation of flying for the first time has all his mental faculties on the alert at extreme high tension [illegible] danger, although not asserting itself, is ever present but [illegible]. Under the sudden strain of an emergency his power to [illegible] and act synchronously may momentarily lapse, resulting in what [illegible] loss of head. In a critical position the pupil has to think [illegible] quickly but in loss of head the mental balance becomes

[illegible]—[illegible] [illegible] [illegible] [

[illegible] under considerations none [illegible] physical illness. At an aviation medical inspection [illegible] is at regular intervals reveals any organic disease [illegible] of consciousness in the air. Flying on an empty [illegible] emptiness in the air. In schools flying [illegible] pupils are provided with a good meal of [illegible] especially on long flights pilots are provided [illegible] sustenance. The effects of cold and fatigue may [illegible] in the air. There are many instances on record of pilots [illegible] in the air either through being wounded or from high altitude effects. Some have been known to recover consciousness before reaching the ground and have been able to make successful landings. In pupils in the E series suffered from attacks of malaria in the air [illegible] both were made to discontinue flying. Another pupil in 'E' series although slow to learn was striking his progress but one day he was noticed [illegible] and rather stupid. He made no attempt to flatten out the aeroplane [illegible] the ground at its glide angle and the pilot was thrown out clear [illegible] machine a distance of 16 feet and escaped with only a slight sprain [illegible] ankle. A few days later in the week in this pupil was seized with [illegible] of typical epileptic fits. On inquiry a history of epilepsy for the past two years was elicited. This was undoubtedly a case of an epileptic fit taking place in the air.

Unavoidable Causes.—From time to time unavoidable causes of accidents [illegible] by precautions is taken at a flying school to prevent [illegible] in the air or on the ground. Set signals are made with regard to [illegible] and landing, means for different flights. The [illegible] is sensitive and critical obstacles again, in [illegible] the view of the instructional in certain positions may [illegible]. These circumstances may cause unavoidable accidents. In the [illegible] unavoidable—two were due to bad terrain [illegible] in the grass in the case of the other two [illegible] one machine was landing and one was [illegible] with the result that both machines [illegible] wrecked but both pupils escaped [illegible].

Pilot's Accidents

The term "type of accident" is suggested to describe the part of the flight in which the accident was initiated. It is possible to give an arbitrary division of a flight into three parts: first the getting off the ground into the air up to 50 or 100 feet second in the air with the various turns, lights, eight climb spirals &c. and, third the landing, which includes the descent from the time the throttle is closed to the time the machine is brought to a standstill on the ground.

H. G. [illegible]

[illegible] gives an [illegible]

Type of accident	[illegible]	[illegible]	[illegible]
(1) In getting off	[illegible]	[illegible]	[illegible]
(2) In the air	[illegible]	[illegible]	[illegible]
(3) In landing	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]

Some of the errors [illegible] the aeroplanes tail [illegible] wing down

In the air a pupil may lose [illegible]

The commonest type of [illegible] He may either flatten out [illegible] ground, and the machine [illegible] attempting to flatten out [illegible] the aeroplane [illegible] at an angle turns over and is wrecked.

Scheme for First Aid at an Aerodrome

The Sick Bay or Dressing Station should be in full view of the aerodrome with a lookout man supplied with field glasses always on duty during flying hours. Should the Dressing Station not be situated at the aerodrome, the former should be connected by telephone to the lookout man whose position commands a good view of the flying area. Immediately a crash or forced landing occurs the lookout man telephones to the Sick Bay notifying the Steward the exact site of its occurrence. A map of the Aerodrome numbered in quadrants can be conveniently arranged in the Sick Bay. The lookout man then leaves his post and proceeds to the scene of accident, taking the hand stretcher on wheels on which is carried a first aid dressing bag and an emergency tool kit case. The latter consists of an oblong box containing the following —

(1) Two crowbars. (2) Two strong wire cutters. (3) Saw. (4) A long stout lance. (5) A hammer. (6) Strong cloth cutting scissors and (7) a fire extinguisher.

Experience of aeroplane accidents teaches one that the above set of implements is very necessary, as in some crashes where the pilot is pinned under the wreckage it may be difficult to reach him. In such cases one feels helpless without these emergency tools. An injured aviator should never be dragged out of a crash unless in the case of fire but rather the wrecked machine should be cut away from him. In many cases this prevents simple fractures from being converted into compound ones. The Steward on being notified of an accident despatches the ambulance which stands always in readiness by the Sick Bay to the scene of the accident

[illegible] Aerodrome Medical Officers

[illegible] containing the following articles

1) [illegible] hypodermic syringes
2) A box [illegible] [illegible]
3) Brandy
4) A bottle of [illegible] water
5) Six [illegible] dressings and slings
6) Two [illegible] bandages
7) A tourniquet [illegible] cutting scissors and a knife

These articles [illegible] easily be packed into a small bag 10 in by 8 in by [illegible] This [illegible] and most useful as it contains all that is necessary [illegible] and does not take up room if one has to go by [illegible] The Surgeon should be sent to the Aerodrome during flying [illegible] and proceed to the scene of the accident by car or foot If the accident is at a distance of a mile or more it is better to go by aeroplane I have now gone by air twenty thirty forced landings and accidents at a distance and am convinced of the utility of this method in arriving quickly and not otherwise [illegible] out of breath as after a long run In connection with the discovery of the site of forced landings and accidents at a distance from the aerodrome much depends on the condition of the country [illegible] Should this be flat country these accidents are fairly easily discovered but in some flying schools the surrounding land may be uneven intersected with dykes and high hedged roads Thus it may be extremely difficult for the search party to find the wreck I would suggest under these conditions that an Sentinel that in aeroplane be sent up immediately, on discovery of the crash to enable immediately to fire a Very's red light if he thinks the pilot is injured [illegible] green light if he thinks the pilot is uninjured and a white light to signify that it is possible to land near the wreck Officers and flight mechanics who arrive or are sent out to the scene of accident should be trained in First Aid with special reference to aeroplane accidents Flying people should not be allowed to come near or help unless under exceptional circumstances

In many cases the crash is so severe that the wreckage has to be cut away from the injured aviator In other cases the machine is upside down with the pilot held head downwards by his safety belt The latter must be cut and the pilot slid gently out The emergency tools are used to cut [illegible] to move wreckage and have to remove the heavy parts e g, the engine, [illegible] to reach the injured person The aeroplane seat cushion [illegible] from the machine and placed under the injured pilot's head [illegible] his body rests on a flying coat spread out on the ground A rapid [illegible] is carried out to the minute the injuries received If the injured person is conscious and in much pain morphine should be injected and he should be conveyed quickly to the dressing station where clothes [illegible] cut away injuries examined and treated accordingly If unconscious

[illegible] cutting away of [illegible] can [illegible] and perhaps [illegible] reduced [illegible] [illegible] the unconscious [illegible] [illegible] the fire extinguishers [illegible] [illegible] they are [illegible] completely [illegible] a few minutes. The [illegible] usually protect the body, but the face and [illegible] freely escape. As the pain is so severe, and this applies to all injuries apart from those caused by burns, it is better to give [illegible] in the field and then keep up on the way back to the dressing station. Morphine should be given but it takes some time to act.

Some Injuries Relative to Aviation Accidents

The injuries sustained are akin to most high velocity accidents but are usually more severe as greater speed is used in aviation. They are composed of: (1) Injuries due to crushing where some part of the pilot's body gets crushed between parts of the wrecked aeroplane, e.g. between the engine and the woodwork or between different parts of the aeroplane. In tractor (engine in front) types of machines, or between the engine and the earth as in propeller (engine behind) types of aeroplanes. Crushing injuries are very severe in nature and mostly fatal in the latter type of aeroplane. (2) Injuries due to collision with the ground, as when the pilot is thrown out or hits the ground with his head in running, [illegible] and with the aeroplane. (3) Injuries due to impact with the pilot's [illegible] the aeroplane, as when the head is violently jerked forward and strikes the edge of the nacelle on the aeroplanes impact with the ground. These injuries such as broken struts and wires may cause local impact injuries. (4) Injuries from fire, as burning and [illegible] in the [illegible] work. And (5) suspension effects, as when the pilot is suspended head downwards in an over turned aeroplane and is unable to release himself from the belt. In many crashes the sudden impact of the pilot's body against the safety belt causes abdominal injury.

The various injuries sustained vary according to the speed and type of the aeroplane and the cause and type of crash (classification). An experience of three years attached to the Royal Naval Air Service impresses me more and more with the [illegible] which befalls pilots in crashes. The present day [illegible] are stronger in construction and more powerfully engined than in early days, thus providing for a greater margin of safety in the pilot's favour. The propeller type of school machine (for instance the Maurice Farman) is considered very safe. It can be landed slowly and [illegible] to cover errors. In a crash it has a strong, and in many cases [illegible] of woodwork to absorb the shock before actually reaching the pilot. On the other hand, in a nose dive in this type of machine the engine being behind, is likely to crush the pilot severely and thus usually prove

[illegible] most [illegible] [illegible] usually [illegible] [illegible] [illegible]

[illegible] not [illegible]

[illegible] wind [illegible] [illegible] [illegible]

stalled [illegible] [illegible] [illegible]

[illegible]

(a) V Series No 1 [illegible] (R N A S) aged 21 [illegible] ldd on landing [illegible] ost his head [illegible] the ground [illegible] turned over [illegible] n and pilot [illegible] ock and [illegible] the [illegible] nose without [illegible] Subconjunctival [illegible] his hut others [illegible] and left hospital [illegible] on at that date [illegible] ashes, nightmares [illegible] were present The [illegible] healed but the knee [illegible] months leave [illegible] from all concert [illegible] later the same signs and symptoms were present [illegible] returned he gave up [illegible] —diagnosis aerosthenia

(b) V Series No [illegible] C (R N A S) aged 18 As a pupil [illegible] instruction, this officer had [illegible] his instructor in a tractor [illegible] while making landing practice The aeroplane hit a small tree and [illegible] The belt held but the pupil sustained a fracture of the nose from a blow [illegible] and also a triangular shaped [illegible] on the right [illegible] and a wound of forehead In hospital three weeks and then sent on leave

(c) V Series No 11 C (R N A S) aged 21 Made a bad landing on his seventh solo lost his head [illegible] put the engine full on to go up again—saw he was unable to clear the trees so shut off engine and invented events The aeroplane was wrecked—the belt held but the pilot's head was jerked forward and struck the machine edge the back of the head also receiving injury From broken strut Service contusion of forehead with abrasions of left side of face and contusion of right lower posterior parietal region were sustained There was no surgical shock or cerebral injury In hospital for fourteen days then returned to flying was given instruction on a slow type of machine, but as progress was slow he was transferred to another flying school

(d) V Series No 14 S (R N A S) aged 20 On seventh solo when sliding down to land stalled at 600 ft slipping and wrecking aeroplane The cause loss of head was not noted in the air The belt gave way and pilot was found stunned amongst the wreckage Contusions and abrasions of face and nose and of left hand were sustained In hospital one week, but this officer was advised to give up flying

(e) V Series No 13 C (R N A S) aged 26 On second solo—engine failure caused a forced landing—when 100 ft from the ground a dense smoke was emitted from the engine clouding the pilot's vision and obscuring his view of the ground so that he was unable to flatten out The machine was turned over and wrecked, the belt held but pilot's head was forcibly jerked forward to the machine over The safety helmet saved scalp injury Pilot walked into camp from the wreck a distance of two miles In hospital five weeks with severe strain of muscles of back and neck X rays revealed no fracture but there was great tenderness over the region of the fourth and fifth cervical vertebra the tendons were greatly increased Was sent on leave for six weeks and had massage to neck daily He has now returned home to flying the knee jerks are still greatly increased but there is no evidence of aerosthenia

(f) E Series N (R N A S) An instructor Failed to correct a pupil's error in the air the aeroplane was stalled and side slipped from 10 ft Last error returned wounds of nose and chin but resumed flying a week later

(g) E' Series D (R N A S) Got off the ground in a tractor machine with one wing down this increased till the machine side slipped and was wrecked The belt held but pilot's head was jerked forward and hit the wreck edge He sustained superficial wounds of nose and left cheek This officer continued to fly in three weeks time

[illegible] Series [illegible] (R N A S.) In a turn to [illegible] and nose dived from 100 ft Pilot got out [illegible] and immediately afterwards He sustained [illegible] the other exposing nasal bones which were [illegible] long of left eyebrow and eyelid and a wound [illegible] Eyeball at the time apparently uninjured and vision [illegible] but on [illegible] hage occurred into the anterior chamber with some [illegible] caused by concussion of eyeball This gradually cleared up and in two [illegible] vision was [illegible] in each eye However, there was a great deal of [illegible] the wounds of eyelid and nose Fibrolysin and radium treatment we[illegible] A year's leave was granted

None of these injuries proved fatal Five continued flying and three gave up In three of these cases the injuries were caused by the head being violently jerked forward and striking the nacelle edge three were caused by the head striking the ground and two were caused by broken struts

(3) *Trunk*—Five occurred in the V series and none in the "E" series —

(a) "V Series No 4 MeK (R N A S), aged 21 On second solo, had flown very badly for some twenty minutes in landing had to flatten out but at flying might bolt broke and pilot was thrown 20 ft and sustained injury to mid dorsal spine The cause was undoubtedly brain fatigue or lethargy X rays revealed telescoping of sixth into seventh thoracic vertebræ, and a sub luxation of sixth right rib at its vertebral end There was no injury to spinal cord Movements sensations and reflexes of lower limbs being undisturbed Surgical shock was very marked and lasted forty eight hours Treatment consisted in lying flat in a spinal bed splint for three months Then a spinal jacket was fitted and patient allowed to move about At present this case is doing well There is some general kyphosis in mid thoracic spine and also some limitation of spinal movement in that region At present in hospital but will probably be able to fly again

(b) "V Series No 6 A (R N A S) aged 18 On fifth solo got off the ground with one wing down and climbing when 50 ft up shot off engine through loss of head and side slipped to the ground The machine overturned and pilot was crushed but the belt held He sustained a large contusion around left eye but no injury to eyeball except some sub conjunctival hæmorrhage vision unimpaired Strain of upper part of abdomen with a belt of hyperæsthesia over epigastrium Injury to mid thoracic spine which an X ray examination proved to be a fracture of the body of seventh thoracic vertebra but with no injury to spinal cord There was severe surgical shock and a great deal of pain the shock passed off in forty eight hours but the pain continued for two weeks The area of hyperæsthesia [illegible] up in five weeks time Treatment flat on back for three months, then a spinal jacket was fitted It is not likely that this officer will fly again There [illegible] ed kyphosis with a hump over the seventh thoracic spinous process.

It is curious that the above two cases both had fracture of the seventh thoracic vertebra in both cases of a telescoping nature in (a) the one centrum evenly [illegible] into its neighbour and in (b) the one centrum unevenly and partially [illegible] into the one below In both cases also the spinal cord escaped injury

[illegible] V Series No 12 B (R F C) aged 26 On second solo Pilot remembers commencing the glide to land from 1 000 ft but can remember nothing [illegible] of the accident He was physically fit before flying and there is no evidence to show that he fainted in air It is probable that he suffered from brain fatigue and was unable to think quickly enough to flatten out Machine was wrecked belt gave way and pilot was found in the wreckage Loss of consciousness for five minutes followed by a degree of surgical shock There was a severe strain of muscles of back but X rays revealed no fracture There was a contusion of lower part of chest and upper part of abdomen due to impact on safety belt.

[illegible] massage but [illegible] likely to [illegible]

(d) "V Series [illegible] instructing a pupil in flying, practice [illegible] and wrecked the machine He sustained [illegible] sprain of right shoulder and abrasion of right knee [illegible] was slight [illegible] was which ceased after admittance to hospital Under [illegible] massage and movement, this case did well and in a few weeks returned to flying duties

(e) "V Series No 1 M (R F C) aged 27 When getting off on his third solo lost his head and put the machine [illegible] down to earth with engine full on The machine overturned and was wrecked The safety belt held but the impact of the pilot s body caused compression of lower part of chest with severe dyspnœa which lasted for about two hours No evidence of fracture of ribs, but pilot sustained a severe sprain of left shoulder Uneventful recovery Granted three months leave

Of these five cases one is still flying one gave up one s subsequent history unknown and two are in hospital, of which one will probably be unable to take up flying again and the other may probably resume flying

Injury to the trunk occurs from crushing effect between different parts of the wrecked aeroplane or between the wreck and the ground It is curious that more severe injuries did not occur

It has been noted that sudden chest and upper abdomen compression can occur from the sudden impact on and tightening of the safety belt around the pilot s body in a bad crash dyspnœa rigidity of muscles tenderness and hyperæsthesia, are amongst the ensuing symptoms from this cause.

(4) *Upper and Lower Extremities* —Five occurred in the V series, and four in the "E" series Six with injury to the upper extremity, and three to the lower extremity —

(a) V Series No 5 K (R F C) aged 18 On his first solo flight saw another machine crash on the ground beneath him In coming down to land this crash seemed to hypnotize him and he failed to flatten out Machine turned over and was wrecked Belt broke and pilot was thrown out a distance of 30 ft He sustained a backward dislocation of right elbow and an inward dislocation of left foot. Unconscious for five minutes followed by severe cerebral irritation which lasted for half an hour The dislocations were easily reduced This officer returned to flying duty in three months time

(b) V Series No 7 N (R F C) aged 19 On his second solo through error of judgment did not flatten out soon enough Belt broke and pilot was thrown out He sustained an impacted fracture of lower end of right radius with broadening of wrist but no antero-posterior displacement Some pain and rigidity over upper part of abdomen from impact on belt This case did well under massage and movement and returned to flying six weeks later

(c) V Series No 9 W (R F C) aged 19 This officer had done thirteen hours flying On a forced landing came down on ploughed land and did not flatten out soon enough through error of judgment The machine overturned Belt broke and pilot was thrown out sustaining a severe sprain of left elbow There was considerable pain swelling and limitation of movement but these rapidly disappeared under massage and movement This officer returned to flying in three weeks time

(d) V Series, No 10 H (R F C) aged 27 This officer has done twelve hours solo flying On a forced landing on ploughed land failed to flatten out enough through error of judgment The machine overturned Belt broke and pilot was thrown out sustaining no injury to right wrist X ray examination revealed no fracture This case did well and returned to flying in three weeks

(e) "V Series No 15 N (R F C) aged 19 On his seventh solo Had

just got on [illegible] ground wi[illegible] [illegible] his path He pulled back the control lever to [illegible] machine [illegible] and side slipped striking the ground with e[illegible] Pilot was thrown out clear of the [illegible] which [illegible] machine was rapidly destroyed by fire Pilot was unconscious [illegible] fracture of left clavicle and [illegible] In this case [illegible] assisted in allowing the injured man to bring [illegible] fallen between shoulders Still under treatment

(7) [illegible] Series [illegible] (R N A S) [illegible] century flight had engine [illegible] one wing up [illegible] machine [illegible] sustained a subglenoid dislocation of left [illegible] and [illegible] lower lip and [illegible] severe bruises of both [illegible] consciousness [illegible] but ultimately did [illegible] flying duties [illegible]

(8) [illegible] Series W (R N A S) [illegible] This pupil whilst under instruction [illegible] control propelling [illegible] stalled through an error in judgment [illegible] side slipped [illegible] wrecked He sustained a fracture [illegible] of right tibia and the upper [illegible] of fibula [illegible] operation was performed a [illegible] This officer [illegible] six months and is now a seaplane [illegible] good more [illegible] the ankle joint although a [illegible] ness occurred after pilot [illegible] exercise

(9) E Series [illegible] (R N A S) [illegible] propelled machine on first solo [illegible] stalled and side slipped 200 ft to earth [illegible] was found in the wreckage [illegible] simple fracture of middle third [illegible] right femur with 2 in [illegible] bruises of left leg, right [illegible] forehead and [illegible] of right eyebrow and bridge of [illegible] Surgical shock was [illegible] and returned in position by means of a traction splint and a good result was obtained This officer returned to flying in eight months [illegible]

(10) E Series E (R N A S) [illegible] flying dual control instruction [illegible] pupil had just left the ground [illegible] the control lever jammed or was held [illegible] tightly by the pupil causing the machine to stall when 10 ft from the ground [illegible] side slipped to earth The pupil escaped unhurt but the instructor sustained [illegible] lacerated wound 5 in long over the right knee, exposing the patella and penetrating knee joint The belt held but the front of the needle was crushed in [illegible] with the instrument head and caused this wound The case did well and returned to flying within five months

Of these cases eight have returned to flying duties and one is still under treatment The usual cause of injuries to the extremities in crashes is due to the pilot being thrown out Usually a hand is thrown out as a safeguard and injury to the upper arm ensues In six of those cases the safety belt gave way and the pilots were thrown out all sustaining injury to the arm the three other [illegible] pilots were not thrown out but all sustained injury to the leg It is [illegible] during the injured aviator out of the wreck but rather to cut the [illegible] from him In three of the cases engine failure and subsequent forced landing was a contributory cause of the accidents

I trust that the scheme which I have outlined for the classification of aeroplane accidents will be taken up and improved by other medical officers attached to air stations

It is only by having a large number of reports that reliable statistics can be obtained

THE TREATMENT OF ACUTE GONORRHŒAL EPIDIDYMITIS BY ANTI-DIPHTHERITIC SERUM

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THE discovery of the specific organisms associated with acute inflammatory conditions has led to a more intimate and more accurate knowledge of the various infective processes and has also contributed to an elucidation of the various phases which each infection may exhibit in its several stages and manifestations. The value of these discoveries, however, has shown itself more obviously in determining the pathogenic history of disease than in affording effective means of combating the infective processes. It may with justice be said that the therapeutic results which have followed from bacteriological discoveries have on the whole been disappointing. It would be difficult admittedly to exaggerate the benefits which have resulted from the use of serum in diphtheria, but even here the value of the treatment is confined for the most part to the neutralization of toxins and to the inhibition of the toxic and inflammatory influence of the bacilli. Even in diphtheria, where the results are pronounced, the infective organisms are not totally destroyed, although their toxic influence is inhibited; the organisms may remain in the throat for months after the infection has disappeared as a disease, and the administration of serum in many cases does not prevent the occurrence of late nervous and cardiac complications, although it must be admitted that in such cases the toxins may have already exercised their malignant influence before the commencement of specific treatment. In the case of other diseases in which the causal agent has been isolated, the beneficial results of specific therapy have been much more limited. Sera (antibacterial and antitoxic) vaccines (simple and mixed) have been employed in a great number of cases from the various infections, and the conclusions to be derived from such experiments and observations are on the whole inconclusive; for while isolated cases would appear to have benefited from the treatment, such cases are so few in number in any particular type of infection as to preclude the possibility of its prognostic value. The apparent benefit in some cases does, however, justify the trial of specific therapy in individual cases. Thus the local introduction of a specific antiserum in some cases and in some epidemics of cerebrospinal fever has been attended with success. In some cases of tubercular infection, especially in lupus, the injection of tuberculin has been followed by abatement of the symptoms and retrogression of the processes of disease. Many cases of acne respond to treatment by a specific vaccine, and occasionally a staphylococcic vaccine has been found effective in the

[illegible] if preventive therapy thus [illegible] administration [illegible] most [illegible] and results, thus in enteric fever and in anthrax the extent of the observations has been sufficient to warrant a favourable conclusion as to the value of the specific vaccine method in this department of preventive medicine In the case of gonorrhœa the results of specific therapy have so far failed to justify its general use the toxic symptoms of the disease are generally so mild as to preclude the possibility of estimating the effect of an antitoxic serum and it is quite certain that an antigonococcic serum does not exercise strong bactericidal influence on the infection Vaccine treatment has been ineffective This may be due to the rapidity with which the organisms become attenuated on artificial media, for cases are on record where special strains have been found to produce an immediately ameliorating effect on the disease The use of antidiphtheritic serum as an empirical expedient in various conditions has been attended with considerable success In acute inflammatory infections of the throat of non diphtheritic origin in inflammatory conditions of the eyes in cases of pernicious vomiting of obscure origin in cases of hæmaturia and in cases of hæmophilia the injection of antidiphtheritic serum has produced results which place its value beyond all doubt It was a recognition of its benefit in such cases in which its influence and mode of action could not be explained at first sight by the accepted theories of immunity which induced me to test its effect in certain phases of gonorrhœal infection

Gonorrhœa like many other infections is protean in its manifestations, the local and comparatively innocent urethritis of the primary stage may find its ultimate expressions in epididymitis cystitis arthritis septicæmic endocarditis or meningitis For the purpose of definite observation I have selected epididymitis for experiment, in view of the fact that this complication presents a stage in the development of the infection in which the signs and symptoms are of a very definite and acute character and in which the course of the disease is such that the value of effective therapeutic interference can be fairly accurately determined and I have employed antidiphtheritic serum because this is the serum which has been employed successfully in those other conditions in which its success would not have been anticipated on strictly biological reasoning In making a selection of cases for treatment only acute cases of epididymitis were chosen milder cases were not treated inasmuch as their inclusion would have destroyed the uniformity of the material on which the observations were to be made The series numbered fifty in each case the testicle was enlarged, painful and exceedingly tender with the scrotal skin tense there was little urethral discharge and in some cases none fever was present as a rule, and with this the constitutional disturbances of febrile origin In a few instances the epididymis was affected on both sides

Method of Treatment

The usual palliative and local treatment was not employed, thus rendering it more easy to come to a conclusion as to the effect of the serum. On admission the patient was well purged and from the commencement large quantities of alkaline water and barley water were given to drink. On the day of admission or following day 1,000 units in normal plasma to 5 cc. was injected under the skin of the abdomen in the usual manner. This was repeated in twenty-four hours and again at intervals of twenty-four hours until as much as 11,000 units to 40,000 units had been given, depending on the resistance of the case. In some cases which appeared more refractory a further dose of 2,000 units was given at the end of a further interval of twenty-four hours.

Results of Treatment

The immediate effect of the injection of the serum showed itself in an amelioration of the acute local symptoms within the first twenty-four hours. On the night following the injection the patients were sometimes restless and showed signs of constitutional disturbance, but on the following morning, as a rule, they spontaneously reported that the pain was less and the tenderness was not so marked. There was in this early period no evidence generally of a diminution in the size of the swelling. Not infrequently the constitutional disturbance was aggravated by the serum and in most cases the temperature was slightly increased in one case reaching 103°F. On the second and third days after the injection the discharge, which may have been very slight and purulent, became more profuse and less purulent, and with this a very decided abatement of the local symptoms set in, the swelling becoming as a rule much reduced in size. By this time the patients were much more comfortable and quite hopeful about the progress of their condition. On the fifth or sixth days the signs and symptoms had almost disappeared in some cases. The discharge continued more profuse and more watery in nature. In more resistant cases where there were still pain and tenderness and less reduction in the swelling, the fifth dose of 2,000 units was given, and by the sixth day the swelling, pain and tenderness had disappeared in the great majority of cases; the epididymis might still be enlarged but soft in nature, the discharge was not now so pronounced. Out of a series of fifty cases only one case proved refractory; this was a case where the original injections had not proved effective, and when after a temporary abatement had occurred a subsequent recrudescence of the inflammation took place.

The following are two typical examples of the course of resolution under serum treatment:—

Case I.—*Acute Simple Epididymitis.*—A. B., aged 26, was admitted to hospital July 3, 1917, with acute gonorrhœal epididymitis; there was a history of urethral discharge for ten days prior to admission. On examination the epididymis on the left side was acutely swollen, and there was much pain and tenderness on

[illegible]

[illegible] 101 F [illegible] the following [illegible] the test [illegible] (a lator recorded [illegible] treated with [illegible] was more [illegible] The [illegible] was still [illegible] 96 F) A further 14 [illegible] was given (a[illegible] [illegible] the following morning (the [illegible] was the second day [illegible] reduction in the size of the testicle pain was [illegible] pressure gradually reduced From the first [illegible] pints of barley water and alkalies were given On [illegible] session the swelling of the testicle had still further reduced [illegible] still more free [illegible] temperature [illegible] 2 000 units was given with a still further [illegible] felt on the following day The urethral discharge [illegible] slight in amount On the ninth day the epididymis was only [illegible] enlarged and spongy to feel There was no urethral discharge [illegible] Transferred South

Case [illegible] Gonorrhœal Epididymitis —Leading seaman aged 25 was admitted [illegible] August 7 1917 with a double gonorrhœal epididymitis and a thick [illegible] discharge There was a history of gonorrhœa for one month prior to admission [illegible] was slight febrile and constitutional disturbance On examination both testicles were much swollen and there was considerable tenderness on pressure [illegible] the acute pain 4,000 units of antigonococcus serum were given on the morning after admission there was an evening temperature of 100° F On the following day pain was less and there was a slight reduction in the size of both testicles The urethral discharge was still sluggish and very purulent, a further 4 000 units was given evening temperature 102 F On the following day there was a considerable reduction in the size of the right testicle morning temperature 99 6 F [illegible] further 4 000 units was given evening temperature 100° F The next day the urethral discharge was still purulent but more [illegible] there was a further reduction in the size of the right testicle with less reduction in the left morning temperature 99° F a further 4 000 units was given evening temperature 101 F On the following day the urethral discharge was much more free and less purulent, both testicles were considerably reduced On the sixth day after admission a fifth dose of 2,000 units was given the epididymis on both sides was soft and very slightly enlarged, the urethritis was still profuse and slightly purulent temperature normal night and morning Transferred South August 11 1917

Conclusions

Uniformity in material and in method are necessary conditions in observing the efficacy of medicinal agencies These conditions have been observed as far as possible in the present study —

(1) In the first place the cases were selected and only such cases were chosen as showed evidence of acute epididymitis, with swelling, redness pain and tenderness on one or both sides Cases with rheumatism or other gonorrhœal complications were not included

(2) In the second place the method of treatment was uniform the patients were all purged on admission put on plain diet and copious drinks of alkalies and barley water were given and the serum was injected in a standard amount at intervals of twenty-four hours No other treatment local or general, was adopted

[illegible] and place the results [illegible] complications had [illegible] period varying [illegible] was uniformity in the [illegible] and this again was [illegible] and further abatement of the [illegible] uniformity in the period occupied in the [illegible] the uniformity in the [illegible] the beneficial results of the treatment

There is no question as to the [illegible] recognized that with the ordinary [illegible] epididymitis runs as a rule a [illegible] the results of the measures described [illegible] success attained by no other medium [illegible]

The advantages of the method are [illegible]

(1) In the first place in the immediate [illegible] most clamant symptoms

(2) In curtailing the average period of the [illegible]

These advantages accruing from a [illegible] immunization are reflected in various directions [illegible]

(a) The patients are enabled to return to [illegible] period thereby increasing the efficiency of the [illegible] their treatment

(b) There is a considerable limitation of the [illegible] extension of the infection to more serious and [illegible] arthritis, cystitis and septicæmia &c

(c) There is a diminution of the likelihood of [illegible] especially in cases of double epididymitis

(d) There is probably also an attenuation of the virulence of the organism involving the possibility of [illegible] of the original infection itself

A discussion of the rationale of the treatment described would carry me beyond the immediate purpose of this paper In my use the treatment is empirical and was suggested by its efficacy in other conditions in which its adoption is justified only by results Its explanation is a subject for those acquainted with the technique and theories of immunity and if those theories are inadequate to an explanation the uniformity of the results described offer a favourable field for further research Whether the leucocytosis is increased the opsonic power or bactericidal influence of the serum is enhanced or whether some other unknown factor contributes to an attenuation of the virulence of the organism—these are problems on which it is futile to speculate they can be solved only by further investigation

It is a recognized fact that in the process of immunization the intro

[illegible] anthrax, for [illegible] it has been found that the injection of blood from the same species [illegible] the immunity of the animal to the specific bacilli it may be that the serum in the case of epididymitis exercises its influence in a similar manner, that is to say the immunity reaction to the antidiphtheritic serum may increase the immunity reaction of the body to the gonococcus. The reason for using antidiphtheritic serum has been indicated already: that reason does not preclude the possibility of normal horse serum from being equally effective: this point could be settled only by observation on a similar series of cases.[1] It should also be noted that while the foregoing observations necessitated the exclusion of all accessory palliative treatment such treatment is quite justifiable as an adjunct. In the case of every infection the disease should be attacked from every possible point of vantage.

I have to express my indebtedness to Fleet Surgeon Paul Starr for placing at my disposal every facility for carrying out these observations and for his unfailing encouragement in the work. I am also indebted to Dr Ivy McKenzie of Glasgow for his assistance in the interpretation of the results.

[1] [illegible] to determine the result of treatment by normal [illegible] of course the results of these observations will be published [illegible]

WORK IN THE GRAND FLEET

By Honorary Surgeon [illegible] Farrer M[illegible]
Late Assistant Medical Officer of Health [illegible]

After the first few weeks on board a battleship [illegible] has disappeared there comes a [illegible] Temporary Surgeon begins to discover that he is going [illegible] a mouldy [illegible] of mind After deep cogitation he looks around to [illegible] hog to fill [illegible] leisure moments occupy his thoughts, and distract [illegible] too

Generally his morning is fully occupied with [illegible] sick bay [illegible] in first aid to the ship's company and dissertations on [illegible] disease [illegible] interested crowd of sailors some of whom may possibly [illegible] a personal [illegible] unto knowledge of the subject [illegible] in advance of his own [illegible] and dog watches (for after all the evenings are fairly by by) [illegible] the [illegible] tedious part of the day And if only he is [illegible] enough [illegible] give himself [illegible] for thought in these periods, then indeed he is content to look forward to a [illegible] action with gusto and relish But once let him get bored [illegible] himself his ship and his fellow officers and then is the second state of [illegible] man worse than the first

Probably it all originates from the fact that he is too full of enthusiasm and vitality, and hence wishes and longs for abdominal operations hospitations and a fleet action every other day All of which is of course [illegible] and shows a desire for in advance of his mental capacity for [illegible] action with a fair number of casualties will satisfy even the most sanguinary of surgeons

Still, his energies may be stimulated into the reading of Medicine or Surgery and yet he who has tried this form of amusement (and probably most of us have) generally shrinks his hand in Although it may not be apparent at first a ship in the Fleet does not prove the ideal place for cramming up medical knowledge The tinkle of the cable as the mud hook is dropped the noise of coal ship lay the worries of censoring and the visits of neighbours in the cabin flat dropping in for a cigarette or the loan of a book—A shilling shocker does—all distract one's thoughts from subjects like pleuritic effusion or blood changes in pernicious anæmia Moreover, three or four months of persistent concentration reveals but little progress for in both Medicine and Surgery there is perforce a lack of cases in a ship to study clinical appearances But dental is particularly interesting cases comes along it is necessary to discharge it to a hospital ship for a patient with a high temperature and pectoral symptoms is of no use for the time being in a fighting unit

His essay into these two branches of his profession not being successful the enthusiast decides to swot up Bacteriology He reads Emery religiously stumbles through Muir and Ritchie and becomes imbued with a lighty enthusiasm The former author's description of a modified biscuit tin incubator appeals to him and he determines to really learn germs However the number of bacteria obtainable on board are few spirochetes fortunately are not plentiful, but gonococci are sometimes found and these are at first hailed with joy by the budding bacteriologist whose enthusiasm is not quenched by the look of astonishment from a startled stoker when asked to provide as much discharge as possible on every conceivable occasion Burn's indian ink method of staining for the *Spirochæta pallida* is of course the only process which can be used on board but this gives admirable results and from a single case of primary syphilis numerous slides can be obtained with films of varying thickness from which can be judged

[illegible] tal specimen [illegible] of blood [illegible] as the staining by Romanowsky's method does not [illegible] with Leishmann's stain. Tubercle bacilli have never [illegible] numerous slides have been made and stained by the [illegible] contents after expulsion by a stomach tube [illegible] of some dirty turpentine re mistake for rum [illegible] reagents for the analysis [illegible] Gilford method performed each month is not [illegible] the result in reference to the amount of [illegible] is watched assiduously by the engineering [illegible]

[illegible] vaccine proves a stumbling block for [illegible] encountered which provide staphylococci [illegible] with the modified biscuit tin incubator [illegible] R A and a carpenter rating are [illegible] hours the whole outfit blows up This [illegible] Still and so discourages the enthusiast that [illegible] more [illegible] and personal out of pocket expenses he [illegible] He may [illegible] the breakage of his incubator blasts his [illegible] the contents [illegible] theoretical knowledge he has gained and [illegible] Sick Berth Staff resume their normal life [illegible] various hours and [illegible] for his arrival at various times of the [illegible] disappear They are certainly con [illegible] his beloved microscope, dissecting flies [illegible] maggots in [illegible] life [illegible] maggots from butter by the [illegible] globules [illegible] is not at all popular with the wind [illegible] However [illegible] and the slides made may not be [illegible] they stand [illegible] patience and industry mementoes [illegible] accepted and [illegible] more Particularly does this apply [illegible] obtained [illegible] of flies, pediculi bluebottles [illegible] is enough to the [illegible] either

[illegible] log [illegible] the [illegible] last three months or even more and then in [illegible] photography This hobby is generally commenced [illegible] Nine [illegible] machine The question of the possibility [illegible] of [illegible] by [illegible] lavish sprain of the ankle with marked [illegible] and [illegible] The exposure required to obtain a good [illegible] long but [illegible] good and numerous successful [illegible] the Temporary Surgeon to seek a pitch of enthusiasm that his [illegible] automatically [illegible] photography This is unfortunately an [illegible] for the [illegible] the lower deck like so much as being [illegible] stumbling blocks cooking ship or boat pelting Once take a [illegible] the quarters and the [illegible] for pilots is ravenous however good [illegible] article [illegible] they are immediately despatched through the [illegible] ashore with a remark something like the [illegible] speech [illegible] but more taken by one of the blokes on board [illegible]

The [illegible] passes [illegible] phases during a period of eight or nine months [illegible] spar [illegible] with a combination of Medicine Surgery Ba tenol [illegible] night [illegible] totally this combination would have established him [illegible] novels Hovering an argument with an [illegible] the whole course of his studies, provided him [illegible] there were no other things in heaven and earth [illegible] his philosophy The argument

[illegible]

[illegible] but [illegible] paper [illegible] no [illegible] what [illegible]

[illegible] part of the [illegible] those [illegible] Yarrow of [illegible] it. In fact at the [illegible] of keeping it all [illegible] problem of [illegible] is prevent [illegible] priming and topping [illegible] all these [illegible] to their selves and the [illegible] turnkey [illegible] continued [illegible] compensat [illegible] feed [illegible] various parts [illegible] the [illegible] but stol applying lot [illegible] injurious [illegible] in the bunker [illegible]

Again [illegible] a big gun [illegible] apply [illegible] spare time [illegible] after that any [illegible] will provide [illegible] to the History [illegible] Explosives [illegible]

Climbing up [illegible] exercise [illegible] out of [illegible] has a classical [illegible] there is [illegible] interest that underlie [illegible] notes of the *capsule* [illegible]

From the lower [illegible] probably the old hand [illegible] is to the [illegible] mess where he sings [illegible] cautious to be dredged [illegible] He is probably suspicious [illegible] that it is a real de[illegible] inquiret with facts and [illegible] whom he alludes to as [illegible]

The other officers of the [illegible] where to go and what [illegible] the two wards of [illegible] these teaches the [illegible] increases his desire [illegible] as to torpedoes, [illegible]

A short lecture [illegible] submerged flat [illegible] experience of seeing a torpedo [illegible] precipitated the writer [illegible] made a lasting impression [illegible] some leisure time was occupied [illegible] Lieutenant and his Warrant Officers [illegible] uses

Observations as to navigation [illegible] the Navigation, Communi-

[illegible] I secure [illegible] an obsolete mine field [illegible] an odd piece of paper and [illegible] look [illegible] creased in size and value as a [illegible] and it is now completely filled [illegible] book of [illegible] finally it is taken down to give the [illegible] idea of the [illegible] so heard in the ward room—[illegible] which previously [illegible] less village' and 'shop' which [illegible] interest to him [illegible] on his own pet hobby—the knowledge of his own ship and the work which appertains to that ship the destruction of the Hun and the safety of his own skin

> For the strength of the ship is the Service
> And the strength of the Service the ship

So that although the first eight months were devoted to work in his own branch the next six months have been filled with a search for medical and nautical knowledge Now he recognizes that the two go hand in hand, and a lecture previously lectures on first aid to gunners and stokers were given in the dressing stations now they are given in the gun turrets and the stokehold respectively In this way the difficulties which are likely to arise in bringing a wounded man from either of these positions are recognized and the precautions necessary and the local treatment demanded are more fully grasped

To those Temporary Surgeons who desire a vent for their enthusiasm and a hobby which will fully occupy their thoughts and be of service, the writer recommends a general knowledge of their own ship and as many others, such as (T B D s and mine sweepers, as they are able to visit The information gleaned may be of no benefit to them when ashore but whilst the war lasts it may be of use to the Service he has joined and it will at least occupy his leisure moments and give him an interest in the affairs and work of the officers and men at sea

The possibility that the other ward room officers may consider the enthusiast a "beastly nuisance" is a remote one for they are pleased to communicate general information which whilst not imparting departmental knowledge, may be of value to the inquirer The advantages to the "Temporary" are many He has at least learnt something of the work of the Navy, he is more cognizant of the duties which will devolve upon him in a big Fleet action, and he has filled the unforgiving minute with sixty seconds worth of distance run

Clinical and Practical Notes.

VISIT TO SOME HOSPITALS AND CASUALTY CLEARING STATIONS IN FRANCE.

By Surgeon-General Sir Frederick Treves, C.B., F.R.C.S., K.C.V.O.

By the kind permission of the Admiralty and the aid of the War Office I was able to spend about a fortnight visiting hospitals in France, being for some nine days at Boulogne, and the rest of the time travelling about to various hospitals and clearing stations nearer the Front. I would wish to express my very best thanks for the kindness, consideration and courtesy with which I was treated both by the officers who accompanied me and by all the members of the Royal Army Medical Corps whom I met. Two Colonels were especially kind to me in allowing me to accompany them in their daily work, and the Sanitary Officer to the Boulogne district was invaluable in his aid during my visit to the clearing stations and other places that one had to reach by motor car. The work of the Royal Army Medical Corps fills me with admiration and gratitude: admiration at the wonderful organization and the most efficient treatment of all kinds that is meted out to the wounded and sick men; gratitude for the facilities which they granted me in inspecting the good work that they are doing.

In the description of some of the things that I saw, I have not endeavored to pick out the extraordinary, but rather to record my impressions of the ordinary common cases and the ordinary work that is being done. The clinical opportunities of the Royal Army Medical Corps are now, alas, superabundant. Compound fractures of the thigh may be seen not in tens but in hundreds; the same with severe injuries to joints, penetrating wounds of the chest, ghastly skull mutilations, head injuries and abdominal wounds of all degrees of severity. The opportunities of the Army surgeon have been and will continue to be much greater than those of his naval brother, but at any time it is possible that a huge mass of acute surgery may fall after a big naval action on the latter's hands, and it was with the idea of benefiting by the Army experience (other than by reading) that I spent my leave in seeing some of the wonders of military surgery.

I had the opportunity too of seeing some of the rest camps, recreation camps for convalescents, and of visiting some sanitary stations. There is a tendency and a good one, to the grouping and specialization of the various forms of injury, e.g., at one place there will be an abundance of chest cases, at another of fractures especially of the lower, and at another of head injuries, so that one comes across medical officers with an experience in each of those group of cases that makes them specialists in the best sense of the word. I will not endeavour to describe in any way the organization or arrangement of the many hospitals and operating theatres; it is enough to say that the wounded soldier has every facility in France and near the place where he is wounded that he would have in the best hospital of his own country far from the field of battle.

Many of the smaller hospitals and operating theatres can be quickly packed up and transferred to another site in motor lorries. Sickness apart from that actually caused from the direct effects of fighting, is almost conspicuous by its absence, but I shall say little about the medical cases, but shall endeavour in what follows to say a few words about each class of the surgical cases. I saw very few cases of abdominal surgery. There was a lull in the fighting, whilst I was more or less at the Front and it is only when there is a push on that abdominal surgery is much to the fore. What there is to do has to be done quickly and at the advance casualty clearing stations.

[illegible] remarks [illegible]

[illegible] lowing [illegible]

[illegible] at the [illegible] necessary [illegible] dressing station [illegible] there to (1) [illegible] [illegible] alty clearing station [illegible] then by (2) [illegible] [illegible] the [illegible] his destination depends on the nature [illegible] the [illegible] hook and his power to stand [illegible] [illegible] ing, [illegible] position are treated and kept in the [illegible] ns but [illegible] patient can be pushed on [illegible] as little [illegible] ble The general hospitals at the [illegible] ns they [illegible] slight cases are not sent down [illegible] not [illegible] to their units Nurses are on some of the ambulance [illegible] at the hospital base, and at some of the casualty clearing stations

The bullet wounds seen are so much [illegible] to be surprised at anything e g bullets penetrating the left thorax [illegible] Usually a symptom [illegible] bes all round [illegible] like the subclavian [illegible] Bullets going into and out of the abdomen without wound of bowel [illegible] cases with parts of the [illegible] shot through or with bullet still retained [illegible] well Of course there is the other side of the picture such as fatal [illegible] lesions and embolisms after wounds elsewhere secondary hemorrhages [illegible] some slight stasis but fatal in their result

Chest Cases

Penetrating Wounds—Very commonly a case of hæmothorax is aspirated after long delay blood drawn off if necessary [illegible] rib resected ribs widely separated by a self retaining retractor (Davis—Collins) and then blood clot and material in pleural cavity removed by the hand Wound stitched up in layers In some cases some 20 oz of saline introduced and subsequently about 10 oz of this aspirated in order to help expansion of lung Repeated aspiration S D S The fluid drawn off is serum, or like pus but sterile

Empyema is occasionally aspirated no sulphuric complications are met with unless the diaphragm is injured

Stationary Hospital

Lung and liver penetrated bullet removed from neighbourhood of anterior superior spine no injury to intestine Lung and liver penetrated, sulphuric [illegible] opened through diaphragm pneumothorax no empyema recovered

Base Hospital

Case bullet through left lung collapsed—Later 4 in rib removed blood [illegible] pressure [illegible] Davis retractor hand introduced wound stitched [illegible] retrieved 10 oz subsequently removed by aspiration Wound [illegible] layers (sutures cash cut through periosteum and visceral pleura) [illegible] middle—slow to skin

[illegible] Hospital—One case recently shot through lung hæmo [illegible] dull on right breathing collapsed and apparently dying but said [illegible] slightly from his almost hopeless condition on admission Two [illegible] cases

Casualty Clearing Station

[illegible] recently shot through chest very little discomfort or symptoms [illegible] Another of the same nature with bullet just under the [illegible] to be removed later left side

Hospital

[illegible] through both lungs but only one collapsed, doing well The medical [illegible] seen two previous cases shot through both lungs which had recovered [illegible] there was collapse of one of the lungs

Post operative lung chills is said to follow with chloroform or ether inhalation

Examining the fluid from the effusion is not sufficient A culture has to be made organism may possibly be [illegible] to elect Cases where there are streptococci Gram positive cocci should not be [illegible]

Perforating Wound of Chest—Small foreign body in rib Not found although two ribs were excised later [illegible] neck [illegible] and subcutaneous

Empyema following gunshot wound of chest Washed out until flavine attempted closure not successful [illegible] eventually to be used

The Major does not like flavine [illegible] of chloroform carrier on 3 per cent (½ strength) and claims benefit is good

Hemothorax Operation [illegible] forty eight hours after injury There is no normal clot [illegible] foreign body

Skingraft [illegible] operation [illegible] chest with upper lobe of lung collapsed [illegible] little pneumothorax

Simple cases of pneumothorax [illegible] recover of themselves side by aspiration if need be [illegible] years ago I had a case of rupture of the left lung in a boy [illegible] by the suffering pneumothorax so that the apex beat was felt and [illegible] the right nipple The pneumothorax gave rise to paresthesia [illegible] and was not aspirated—the heart gradually resumed its position [illegible] the boy's recovery was complete

Brain Cases

I saw trephining cases all doing well A case of foreign body in the orbit causing blindness [illegible] of the occipital region with hemianopsia In one of these there had been extensive hernia cerebri which had done well with brilliant green as a dressing [illegible] pieces of costal cartilage had been used to close the opening left by trephining but one surgeon explained to me his method of using [illegible] for this purpose between the bone and dura matter for about ½ inch all [illegible] over the aperture

Plastic Surgery of the Face and Jaws

Beautiful but most painstaking models of original injuries showing cases in which the lower [illegible] have been destroyed the nose blown off and soft parts hideously lacerated [illegible] models very true to life the patients own hair being used when necessary

In making a new nose [illegible] of skin is transplanted to the forehead and later on a Tagliacotian operation [illegible] wound sewn up with ophthalmic silkworm gut sutures [illegible] of the left labia superioris et alaeque nasi is dissected up into the new ala I saw every case ten days after operation, with the stitches still *in situ* and rubber tubes still in new nostrils one each side of new columella that could sniff and speak quite naturally

Another case The whole of the bregmat of the lower jaw had been blown away leaving only a single molar on the left side To this had been attached a new set of teeth on a higher level and a new lower lip quite soft and pliable made from the tissues of the neck In get softness and pliability the subcutaneous tissues are dissected away as much as possible without risk of gangrene The patient was able to open the mouth quite widely

I saw some of quite the worst cases up and about But for slight scarring there was very little disfigurement

Numbers of photographs showed the patients progress and the final results are really marvellous

Most excellent work of the same nature is being done at Etaples where there are about sixty in and fifteen out patients The way in which jaws are replaced destroyed wholly in part the septum of the nose the floor of the mouth is

[illegible] size [illegible] mouth [illegible] Skin [illegible] form o[illegible] floor of the [illegible] hair [illegible] most clo[illegible] time [illegible]

All op[illegible] Elsewhere [illegible] wounds

[illegible]

Very [illegible] characteristic [illegible] of the symptom [illegible] antiseptic p[illegible] such an affi[illegible] that I met [illegible] cases accomp[illegible] by drainage and [illegible] scrupulously cleaned by the cutting [illegible] A dirty wou[illegible] stitched up with on[illegible] occasionally happ[illegible] — plugged with [illegible] wrong Plugg[illegible] with gauze is not [illegible] Wh[illegible] hipp is added to Dakin's solution there is [illegible] chemical contest inside th[illegible] tissues of the unfortun[illegible] [illegible] used in excess is very hard to remove I saw a few cases [illegible] and I saw cases where it had been used with quite good resul[illegible] would seem it must be used before sepsis supervenes, not [illegible] thorough drainage and that a wound must not be plugged or one [illegible]

Brilliant green is occasionally used I saw one c[illegible] the occipital region with hemionopia in which its [illegible] lly successful

Eusol dressings and syringing with eusol lot[illegible] of 2 per cent more powerful deodorant than Dakin

Flavine good chemically but *Bacillus coli* beats it

Proflavine as compared with acriflavine just [illegible] Good for wounds united at once but open wounds [illegible] days just like those recently inflicted This has been [illegible] effects

Four Cases of Penetrating Wounds of Knee joint — Th[illegible] foreign body removed joint washed out and sow[illegible] skin wound excised joint washed out with proflav[illegible] which the foreign body had penetrated the capsule [illegible] wound treated with proflavine did well

Better than Dakin The medical officer had tried [illegible] on 200 cases with flavine amongst them two cases of [illegible]

26th General Hospital—Ov[illegible] H

One hundred cases treated with Carrel Dakin best [illegible] fifty cases treated with flavine next best forty three cases treated with [illegible] salt The last named causes necrosis of wound surfaces, especially [illegible] are used

Four per cent cases of secondary hæmorrhage Carrel Dakin [illegible] due to improved treatment at the Front [illegible] per cent cases of secondary [illegible] flavine, 4 6 per cent cases of secondary hæmorrhage hypertonic salt

I heard elsewhere that secondary hæmorrhage was most common [illegible]

treated by [illegible] salt. The fluids [illegible] the observation [illegible] those of slight [illegible]

Dichloride of Solution in Eucalyptus [illegible]—A concentrated solution 12 per cent [illegible] be kept and diluted to 40 per [illegible] with paraffin when required for use. The 2 per cent solution described [illegible] kept and should be used three or four times a day after being made. Wounds treated with this have peculiarly pink granulations.

Carbolic lotions seem rarely used for [illegible] but are used for instruments.

Bichloride of mercury solutions used chiefly for the hands.

Gas Gangrene

Case 1—Where all the internal muscles of the thigh except the sartorius had been dissected away. No skin removed. This by undercutting will eventually lead to a cover the large granulating surface now exposed.

Case 2—Brachial artery thrombosis, arm was divided, treated by open amputation, flaps turned back. This had led to ordinary gangrene of the anterior one. The medical officer in charge told us he had seen similar cases where flaps had been so treated and was strongly opposed to the practice.

Case 3—Guillotine amputation through femur, mass of granulations protruding from exposed medulla. Wound secondary amputation rendered necessary for septicæmia, doing well. (Argyle Auxiliary Hospital.)

Case 4—Gangrene of calf muscles which had been extensively dissected, may dressed after healing, washed with hydrogen peroxide. (Casualty Cleaning Station.)

Case 5—Gas gangrene of anterior tibial muscles. Both tibial arteries tied, no mortification followed. Gas and oxygen gangrene when the wounds were dressed. I also saw a case of fatal gas gangrene (not gas) of the anterior tibial group of muscles where the popliteal artery had been tied. I was told by the medical officer that he had seen six cases in the cases where this operation had been done with success and all had been saved.

Case 6—High amputation at the thigh for gas gangrene and multiple wounds.

Case 7—Amputation at shoulder joint for gas gangrene.

Often it is not possible to cut proper flap or even to leave enough skin to cover the stump in these high amputations. I saw a case of this kind. I saw an early case of gas gangrene with tympanitis of the limb and a drum note on stroking it with a knife. Muscles often have no gas bubbles in them but are downy to the touch. Gangrene can be made out spreading along the blood vessels and from muscle sheath to muscle sheath. I saw a case where blood was effused independently of any trauma with metastasis in both legs and shoulder. This is often seen at injection punctures, morphia or for subcutaneous saline.

Case 8—Gas gangrene of rectus sartorius and semimembranosus following guillotine operation of thigh. Discoloration of muscles very marked. In this case there was very little blood pressure and a tourniquet was not used for fear of further gangrene. When the amputation was performed there was no bleeding from the profunda. Basil lysol 2 per cent a better deodorant than Dakin's solution.

Two cases of gas gangrene had been treated by flavine at the casualty cleaning station, but I did not see them.

Case 9—Wound of thigh and buttocks, non penetrating foreign bodies, gas infection. *Tetanus* supervened twelve days afterwards and was treated by subcutaneous and intramuscular injections of serum, 2,100 units in seven days. No drugs but free stimulation with spirits and a bottle of port every twenty four hours. The medical officer attributed recovery to the port which produced muscular relaxation better than anything else.

In doubtful viability of injured muscles methylene blue 10 per cent solution in formalin (40 per cent) solution will stain the non viable muscle a purple blue colour. All the stained muscles are cut away. This does not apply to gas gangrene cases.

Treatment of Shock and Gas Infection

Medical officer [illegible] Casualty Clearing Station report that [illegible] traumatic shock and gas infection [illegible] is acidosis and lowered blood pressure the more marked the acidosis [illegible] lower the blood pressure the greater [illegible] degree of acidosis being found just before death Acidosis is changed from [illegible] extreme degree by surgical operation

Treatment should be directed to (1) reduce blood acidity (2) to provide alkaline reserve especially before operation (3) giving of sugar solution to produce acids in the body (4) to apply external heat Wounded men with low blood pressure rapid pulse and respiration and with symptoms of shock are treated with —

(a) Sodium bicarbonate 1 glucose [illegible] in 8 oz of water every two hours by mouth, to cases not in [illegible] state

(b) *In critical state* — [illegible] venous injection of Or of 1 per cent glucose 3 per cent sodium bicarbonate [illegible] Injection repeated if necessary If much loss of blood intravenous injection of [illegible] Or of 5 per cent solution of gum in normal salt solution if transfusion of blood is not possible

(c) Either the drunk or injection *before operation in cases of shock*

(d) Only minimal doses of morphia as it favours acidosis

To make gum solution Powdered gum acacia (B P) gr 960 sodium chloride gr 174 sterile water Oz Gum slowly dissolved over guarded flame and filtered through muslin to take out foreign bodies Mucilage (B P) 15 parts of mucilage 10 parts of gum acacia

I saw several cases now convalescent in which injection of glucose and soda bicarb had been used Another method of treatment of shock is the application of heat by means of electric lamps (four of 60 candle power) slung on cradles over the body Some surgeons instead of using saline employ a 3 4 per cent solution of gum in Ringer's fluid (Bayliss's solution)

Blood Transfusion —A modification of Kimpton's tube paralleled before operation to prevent clotting is pushed distally into vein of the donor, allowed to fill then pushed into the vein of the patient upwards Direct transfusion

Hollerton's direct transfusion from radial artery of donor to vein of recipient B P liquid paraffin is put into Hollerton's tube before the operation artery clips are used to control the tube Tubes can be got from Messrs Down Bros

Ruth's Blood Transfusion Apparatus can be got from Messrs Gardner Edinburgh One surgeon at a Casualty Clearing Station told me he had seen about twenty five cases of indirect transfusion in which the blood of the donor was put into a 2 per cent solution of soda citrate and then squirted into the vein of receiver He had done five cases himself

Use of Secondary Suture General Hospital

Suture of wound not performed in first twenty four hours I saw several cases of this and its method has been published in a paper by Captain John T Morrison R A M C in *British Journal of Surgery* When a wound is ready for suture is shown by a bacteriological test applied to skin edge, exposed bone and [illegible] Wait for two consecutive favourable reports at interval of twenty four hours Final examination just before patient goes to theatre

Skin edges must come together without undue tension—skin must be healthy—wound surfaces approximated to obliterate all dead spaces Iodine is not sufficient to cleanse skin spirit soap followed by ether, then iodine or Harrison's solution should be used All buried ligatures must be removed Silkworm or chromicized catgut deep mattress suture removed in two or three days, and those to approximate the skin edges about the tenth day Free movement only after three weeks Avoid undermining if possible Longitudinal

[illegible] long through the [illegible]

[illegible]

[illegible] into the [illegible] others of [illegible] splint [illegible] universal and [illegible] —Dosaelt the most unknown [illegible] suspended and extension made by weights (modified)

Abduction used for fractures of the upper third [illegible] means This position I was informed by an old house surgeon [illegible] cross Chennel hospital ship is very difficult to deal with [illegible] tion presenting nearly insuperable difficulties Block [illegible] four post bed lashed on to the patient's bed is made of [illegible] ned 3 ft 2 in in length so that a long length broke [illegible] oe top are notched so that abduction or adduction can be [illegible] made by the carpenter at the Anglo American Hospital in [illegible] The fractured limbs he on pieces of flannel fixed to the metal [illegible] Thomas's splint by wooden clothes clip paper clips or glue Any [illegible] can be incised or omitted so that a wound can be dressed or [illegible] fingers can improved without taking down the whole splint In [illegible] and Gooch's splints [illegible] est as stays beneath or above the [illegible]

Extension is made from the foot from the calf from the [illegible] ins of strapping and weights (sandbags) I saw no case of [illegible] the lower end of the femur but was told that nails were [illegible] in each condyle for the same purpose I came across two [illegible] stump extension apparatus has being used The shin helmet [illegible] pulled down and this is passed in front of the tendo Achillis [illegible] proximal end of the os calcis It did not appear to cause any pain and the small wound—tunnel of granulations—soon closes after removal of the stump (the apparatus can be obtained from Messrs Allen and Hanburys)

The Royal Army Medical Corps officer here is a mechanical genius The position he gets with his fractures is practically ideal no shortening no displacement He uses no anæsthetics when he puts them up and the patients once the fragments are in position suffer no pain He uses no antiseptics except hydrogen peroxide to wash out foreign bodies He cuts an iv no wounded structures In the first stage of his treatment the lower part of the bed is elevated 10 in the body weight gives the proper amount of extension which is made on the lower part of the limb by sandbags from the foot calf, or upwards so that any undue strain on the soft parts is avoided by changing the extension site and direction Thomas's splint is usually used and is best when the fracture is near the knee In the second stage the patient is kept horizontal in the third stage sitting in a chair This avoids stiffness Later on calipers boots are worn the officer himself making and fitting the calipers

In one case where shortening was obviated there was a gap of 1½ in between the fragments yet callus formed No bits of bone are removed but those entirely detached and great stress is laid on always restoring the natural antero posterior curvature of the femur To avoid sores and pain the glue and flannel fastenings of the foot to the foot piece do not encircle the whole foot, i e do not meet on the dorsum warm glue is used

I saw in the process of manufacture a very ingenious splint for the wrist and fingers a ball fitting in the palm of the hand and the splint so arranged that parts could be removed to give movement to the fingers or wrist as required In the treatment of fractured femur or humerus there is no movement of the knee or elbow joints employed To what extent is there stiffness afterwards!

[illegible] used by the medical [illegible] can be [illegible] the Duchess of York's [illegible] Organisation Stratford House [illegible] Yard or Kensington [illegible] Kensington Square London

The Wallis Mayo [illegible] Extension Splint is much used [illegible] limb is supported by [illegible] over and hung [illegible] at the side A Bradford [illegible] also in poster [illegible]

Balkan splints are very common and good but not high enough

Wounds of Joints

The treatment of perforating wounds of the knee joint varies considerably in its later stages Foreign bodies and loose fragments are removed, if possible early and in the Casualty Clearing Station sometimes the joint is washed out with Carrel-Dakin solution Sometimes lipiodol is put in and the wound stitched up—in some the joint has been treated with sulfaflavine or proflavine I saw cases in which the patella and large parts of the femoral condyles had been removed Later on, if things do not go smoothly the treatment varies according to the infection if staphylococcic aspiration of the joint may be sufficient if streptococci are present more efficient drainage is required Some surgeons make lateral incisions on each side of the patella Some in addition drain posteriorly by the side of the hamstrings and use rubber tubes I saw several cases where excision of the joint had been practised and the excised surfaces kept apart by extension and gauze packed between them The latter is taken out at varying periods of time Of necessity this does not always make for primary union but it gives very efficient drainage and it is argued that a second excision later on done under safe conditions will eventually lead to bony union and a good but shortened limb Some of the immediate results looked very far from promising—I saw on cases where by means of an omega incision into the joint the seminular cartilages had been removed In some of the excisions a great deal of the femur had had to be taken away Some surgeons condemned excision relying on absolute conservatism or amputation above the knee joint I saw one knee-joint with a mixed diplococcic infection, which had been washed out with Dakin's solution, doing well, and the capsule was stitched up a week after the injury Strips of vaseline lint were often used to protect the neighbouring skin and they were said to be better than ones with ung [illegible] upon them except when there was already skin irritation present Lint was used rather than gauze

Germisol or ousol is used by some as dressing for excised joints One case of excision of the knee for a penetrating wound had gauze plugging between the bones for six or seven weeks There was no bony union, although the injury was four months old Re excision will be necessary Excision was performed here about ten days after the injury, and the joint was "badly infected It was the opinion of the surgeon that excision should be done earlier 'up the line One case of perforation of the joint and fracture of the femur had been treated by Bipp and closed It was doing well A case of compound fracture of the patella in which the articular cartilage was not touched, and the fragments were brought together by a circular wire, had done well He was a bleeder—but the bleeding eventually stopped of itself

Excision of the elbow joint for fractures and foreign bodies in joint do well because of the free drainage afforded, but it is sometimes a question of the eventual utility of the flail like joint that is so often left I saw a case of a miner about whom his surgeon was in some doubt on this point

In the opinion of a surgeon of experience if amputation has to be performed close to the knee the suberurous pouch should be dissected out and when the joint is laid open he favours an incision across the ligamentum patellæ like that for excision care being taken that there is no posterior pocketing in the bursæ

beneath the [illegible]
and how [illegible]

Penetr[illegible] expose the [illegible] abdominal [illegible] is customary [illegible] foreign bodies [illegible] experience [illegible] be constructed [illegible] the nearest [illegible] a wounded [illegible] as the [illegible] incision

Wound [illegible] divisions [illegible] transverse cut [illegible] the insertion [illegible] end [illegible] subsequently [illegible] to end sutures of divided [illegible]

Hernia [illegible] Wound of kidney from the front [illegible] ating nephrectomy [illegible] tuberculous [illegible]

Bayonet [illegible] Lumbar nephrectomy This patient is all recent [illegible] three bayonet [illegible] wound

Other cases [illegible] and lung both from in front and behind

Wound of [illegible] *all and than* The spermatic vessels were involved in [illegible] sloughed

In resection [illegible] end to end anastomosis is usually done [illegible] a gastro-jejunostomy [illegible] anastomosis each end of the bowel is crushed [illegible] and [illegible] suture then anastomosis made laterally The mesentery [illegible] closed to the removed bowel the vessels being ligatured [illegible] any part of it is removed

Injuries [illegible] cases where sensation was also affected with pain for [illegible] months no motor paralysis The surgeon in charge had [illegible] a lumbar laminectomy with [illegible]

Anæsthetics — [illegible] anæsthetics is said never to be followed by post operative [illegible] other effects of gas and oxygen the only drawback being exp[illegible] Nor is even for two hours as a local anæsthetic used in plastic operation

A multiphasic [illegible] five patients with a bad stomach the amount of gas in the [illegible] for gassed cases The mouth flasks are put to ingenious use [illegible] as for administering anæsthetics subcutaneous saline and enemata

A very ingenious apparatus has been invented for patients with tumors of the neck and thyroid cartilage [illegible] with a pointed volcanic core [illegible] rounded by a rubber tube about the size of a No 8 catheter the tube being larger than the wire is passed down the [illegible] into the stomach its upper [illegible] trudes from the mouth and is [illegible] the ear One patient [illegible] starving was tested from [illegible] The apparatus can be obtained from Messrs Mayer and Meltzer

Bleeding from *tonsil* [illegible] prevented or stopped by bringing the [illegible] and posterior pillars of the fauces together by Michel's clips over a small pad of gauze

Cases of trench nephritis from exposure are not uncommon Œdema of the lung with trench nephritis is sometimes treated by bleeding, with good results As far as *Weil's disease* is concerned, a medical officer informed me there had been no fatal case of jaundice except where the kidneys were previously diseased, and that other cases had recovered "606" is no good as a remedy I saw under the microscope the liver cell of a guinea pig in which there was a spirochæte It was in the cell not between the liver cells The blood vessels being affected is the cause of the epistaxis, melæna and other hæmorrhages that accompany this disease

Six cases of polyneuritis all died

A CASE OF DIAPHRAGMATIC [illegible] A GUNSHOT WOUND OF THE LEFT [illegible] SECOND [illegible]

By Temporary Surgeon [illegible] HILLWOOD [illegible]

Diaphragmatic hernia is of [illegible] occurrence [illegible] following case of some interest. The patient was [illegible] one of the day previous to admission had been [illegible] having over a rail while thus engaged [illegible] The result was that he sustained a [illegible] severe [illegible] and immediately been seized with intense pain in the left and lower part [illegible] chest. Soon afterwards vomiting began.

When received on board the Sounder on April [illegible] about twenty [illegible] hours after the accident, he was looking depressed and ill, vomiting, almost [illegible] with large quantities of dark brown fecal smelling fluid. He had also [illegible] hiccup, but was a good colour, features were not pinched or altered in character, and the tongue was clean and moist. Temperature, 98.1; pulse 94; respiration 20. His left cold and the pulse was thin and compressible. The bowels had been opened just before the accident, but not since.

The history he gave was as follows. In May, 1915 that is nearly two years previously, while in Gallipoli, he was wounded by shrapnel in the left side of the chest. This was borne out by the presence of two depressed scars, one behind in the scapular line and tenth interspace, and the other in the nipple line and sixth interspace in front. These wounds had healed satisfactorily, and after about four months he returned to duty, being sent to a minesweeper. Here he remained some eight months or more but never felt perfectly well, suffering much from sea sickness for the first time. He was conscious of pain and discomfort in the left hypochondriac region. Finally he had a very severe attack of vomiting and abdominal pain, not unlike the present one, and he was sent to hospital about May or June, 1916. After a month he again returned to duty and for some time past he had been serving in destroyers. Straining and heavy pulling always caused pain in the left side.

Condition on Admission.—The chest was symmetrical, the left side moving rather less than the right. The apex beat was impalpable and the lower half of the left side of the thorax was dull to percussion, with the exception of a roughly circular area near the angle of the scapula, which was hyperresonant (not tympanitic) and where heart sounds could be well heard. Breath sounds were absent over the dull area. Auscultation was much interfered with, however, by the loud stomach splashes and gurglings produced by the hiccup. In the apical region there was normal lung resonance and breath sounds. The abdomen was markedly retracted, but moved well on respiration, and there was no muscular rigidity. Moderate tenderness was elicited in the epigastrium and along the margin of the left costal cartilages. A tympanitic note was obtained over a small area between the basal dulness in front and the costal margin, and was thought at the time to represent stomach, but was most likely due to transverse colon.

Nothing else abnormal was found. A strong suspicion was entertained of a diaphragmatic hernia of the stomach.

Exploratory Laparotomy.—The abdomen was opened by an incision below the left costal margin and collapsed small gut presented. The transverse colon, which contained a little gas, was traced up to the left cupola of the diaphragm, where a small portion of the stomach was also found. The stomach, transverse colon and some coils of small intestine passed through a large aperture in the diaphragm, about 2 or 3 in. in diameter. This was situated immediately over the apex of the spleen.

The small intestine was easily reduced by gentle traction and two fingers could then be passed through the opening into the chest. Many firm adhesions were

[illegible] and apparently [illegible] large [illegible] opening was slightly [illegible] but it was [illegible] utterly impossible to [illegible] adhesions [illegible] to obstruct [illegible]

The patient could be opened [illegible] only a few times. Temperature [illegible] began to rise in exactly as before [illegible] obtrusive sinking. Temperature [illegible] morning of April 8.

Post mortem Examination.—The [illegible] was occupied by a greatly dilated stomach [illegible] colon—these structures pushing the [illegible] so that the apex was in the mid sternum [illegible]

The Right Lung.—This presented [illegible] of emphysema at the anterior margin. The [illegible] crepitant portion at the extreme apex, the [illegible] being compressed against the heart and [illegible] thick, and quite solid.

The heart was small, dehydrated and pearly [illegible] right side somewhat flabby and dilated. Normal in [illegible]

The Hernia.—The protrusion through the diaphragm [illegible] was in part wrapped in omentum, the hernia having [illegible] the plenum from the chest wall and upper phrenic surface and pushed [illegible] the mid lobe of the collapsed and atrophic lung. The stomach [illegible] and quite [illegible] were all matted together and bound to the walls of the [illegible] by an immense mass of firm adhesions evidently of cicatricial [illegible] above the diaphragmatic [illegible] completely obstructed the colon, the lower above [illegible] contracted round a little fæcal matter. The [illegible] to be actually strangulated anywhere, though [illegible] various directions. The sartorius [illegible] the first part of the duodenum being dragged [illegible] of the aperature together with the terminal [illegible] very small portion of the pyloric end in the abdominal [illegible] seen at the laparotomy, the pylorus [illegible] drawn more up into the chest.

The Diaphragm.—The aperture was [illegible] tendinous margin. It was situated just above [illegible] the spleen and behind the diaphragm was scarred and [illegible] that the finger could be readily thrust through from one side [illegible] The left cupola was lower than normal.

The spleen was matted in adhesions, and firmly [illegible] the diaphragm by a small fibrous cicatrix which evidently represented [illegible] caused by the shrapnel bullet two years before.

The intestines above the obstruction [illegible] were collapsed and empty save for some gas in the large bowel.

All other organs were normal.

The case is of importance as an instance of [illegible] sequelæ to a wound involving the diaphragm and the fact that [illegible] occurring from time to time during the War should be [illegible] pathologic purposes. Early operation will do something to relieve the [illegible] associated with the condition.

The chances of reduction and repair are small [illegible] hernia is large and acute symptoms have supervened, the results of all recorded cases, so far as I am aware, having been fatal.

It was [illegible] that in a [illegible] of these [illegible] from an injury [illegible] hypochondriac region the [illegible] ran a very [illegible] course but that [illegible] stage became established

The question of repair of the opening [illegible] only comes in where reduction can be effected and as this is rarely possible [illegible] hardly a pressing one in cases of this type Suture is difficult owing to the size of the aperture and its situation and in the case here described the most suitable procedure would have been the method suggested by Berry where the liver or spleen is mobilized and used to cover the deficiency

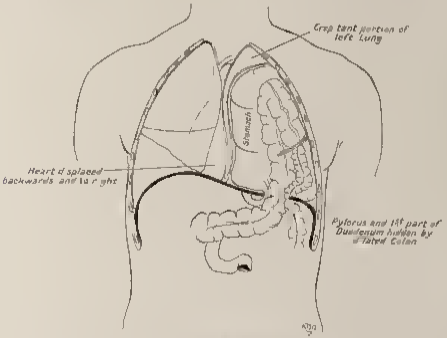

Diagram of displacement of viscera in the case of diaphragmatic hernia

The site of the obstruction would seem to have been in the transverse colon but the usual symptoms of large gut obstruction were naturally masked and complicated by those due to the embarrassed stomach The intestines were normal and showed no signs of hypertrophy suggesting chronic obstruction The pylorus was patent the intestine above the constriction having emptied itself by retro peristalsis through the stomach

A CASE OF RUPTURED SPLEEN—SYMPTOMS OF HÆMORRHAGE OCCURRING THREE DAYS AFTER INJURY

By Fleet Surgeon W F Gribbell R N

S M O Hospital [illegible] Liberty

Mr O crashed in a double seater machine from a great height the pilot being killed The survivor sustained a fracture of the right fibula and contusions over the left eyebrow there were no other signs of injury He was taken to the Queen Alexandra Hospital, Dunkirk on the same day and felt perfectly comfortable during the time he was there except for slight constipation which was relieved by castor oil forty eight hours after admittance Three days after the

accident he [illegible] the [illegible] for passage to England On arrival [illegible] down to his [illegible] and kept in bed The distance from the [illegible] in the camp is about a mile and the roads are bad in parts

Owing to the [illegible] being rather bruised and [illegible] somewhat painful a modified diet was ordered Mr O was seen twice during the course of the afternoon and was perfectly comfortable [illegible]

When having his dinner that evening he suddenly collapsed I saw him immediately and found him lying with his knees drawn up and complaining of pain and distension in the abdomen—especially in the left hypochondrium Examination showed rigidity especially marked over the left rectus dulness in the left flank and obliteration of the liver dulness The temperature was 96 6° F and he was pulseless With hot bottles, &c. his condition improved and in consultation with Dr Nockolds S M O, of the Queen Alexandra Hospital and Staff Surgeon Cooper, R N it was decided to operate as soon as possible

Dr Nockolds who has had much experience in abdominal surgery operated, and a large lunation was made over the left rectus in the upper half the muscle being pulled over to the median line Directly the abdominal cavity was opened blood welled up freely and large clots of blood escaped The hemorrhage was coming from the spleen which was found to be freely ruptured

The pedicle was tied and the organ removed There was a transverse tear at the junction of the middle and lower third extending nearly the whole way across During the operation saline intravenously was given and relays of hot bottles kept going owing to the precarious state of the patient it was impossible to remove the large amount of clot in the abdominal cavity and the wound was sewn up as quickly as possible

The patient was not removed from the theatre, but I regret to say death occurred three quarters of an hour later Mr O informed me just before going under the anæsthetic that he had felt a little uncomfortable in the stomach during the course of the afternoon but he did not think it worth complaining about

A CASE OF HEART MASSAGE

By Fleet Surgeon Arthur R Thomas [illegible] R N

W W aged 21, stoker, R N R, was admitted on December 9, 1916 as a case of malaria with the following history —

In October 1916 whilst his ship was at Bombay he was said to have contracted malaria and was on the sick list from November 1 for seven days suffering from this disease

On November 28 he was again placed on the sick list suffering from malaria this attack being fairly severe with intense headache and general malaise but was apparently of short duration as on December 3 he came under treatment for the third time He complained of intense headache with some pain and tenderness in the epigastric area, the splenic dulness being slightly increased There was no vomiting The temperature was elevated being 101 1° F in the morning, and 101 F in the evening

December 1 The temperature although still raised had fallen to 100° F There had been profuse sweating and he was very weak

December 5 On admission to hospital he complained of intense headache and general malaise and appeared to be rather comatose He was anæmic and debilitated

On examination his temperature was 100 6 F, pulse 60 respiration 20 the tongue was dirty the spleen was just felt otherwise nothing abnormal was detected in the abdomen heart or lungs A mixture of quinine was ordered and calomel gr iii were given Evening temperature 98 4 F pulse 60

December [illegible] still complained of [illegible] no discharge [illegible] and there was [illegible] of injury but [illegible] fused No [illegible]

Examination [illegible] and vessels enlarged The eye [illegible] pulse 52 respiration 20 December [illegible] on 20

The intense headache [illegible] state, but was easily roused He [illegible] some clear fluid on each occasion There was [illegible] axes of pupils The urine was normal No [illegible] ies were [illegible] A leucocyte count gave 10 600 per cubic [illegible] He was [illegible] the bowels only being moved after an enema [illegible] thing nourishment [illegible] freely During the day a very slight purulent discharge was noticed from the left ear also there appeared to be some [illegible] pressure on the left mastoid An X ray photograph was taken but [illegible] showed nothing [illegible] reacted in the negative Two leeches were applied over the left mastoid and acted well During the evening an ophthalmoscopic examination was made the right disc was seen to be a little more swollen the left one was rather more difficult to see but was swollen and the vessels congested Evening temperature 97 8° F pulse 60, respiration 20

December 8 Temperature [illegible] pulse 52, respiration 20 The patient had passed a very poor night The general condition was unchanged he still complained of severe headache The pupils were equal and reacted normally there was no paralysis and no [illegible] of the head

An examination of the blood failed to reveal the presence of malarial parasites The red blood cells were 4 400 000 and the leucocytes were 18 000 per cubic millimetre, a differential count giving the following —

Polymorphonuclear	78 57 per cent
Large mononuclear	1 5
Lymphocytes	17 [illegible]
Eosinophiles	0 5
Transitional	1 0

At 1 45 p m the patient had [illegible] his condition being otherwise unchanged temperature 96 8° F pulse 56

I was asked to see the case in consultation the patient was undoubtedly very ill lying on his right side [illegible] and in a semi conscious state He was easily roused and although his intelligence was slow answered questions perfectly correctly and done [illegible] previous evening The headache was chiefly left sided and radiated from the mastoid over which there was some swelling of the skin and marked tenderness on pressure or light percussion when compared with the unaffected side The tongue was coated, the bowels were only moved after enemata The pupils were equal and reacted normally and there was no paralysis The right meatus and tympanum looked quite normal the left one however was not seen partly owing to a fullness of the canal and partly because the patient resented examination

The diagnosis made was that the patient was suffering from some cerebral complication probably an abscess consequent upon old middle ear disease

The patient was transferred to a [illegible] ward for immediate operation and at 6 40 p m after preparation I opened the left mastoid antrum with the intention of doing a Stacke's operation and to follow the disease upwards as I felt sure that there was some intracranial mischief Anæsthesia had been induced with ether and there was every sign of the patient taking the anæsthetic well but shortly

after the [illegible] shallow and rapid though [illegible] to 120 [illegible] of good volume and rhythm [illegible] on the [illegible] condition became decidedly [illegible] irregular and running the [illegible] the corneal reflex absent

Potassium [illegible] was injected [illegible] was some forty minutes from the [illegible] given but the patient's condition [illegible] was discontinued and the [illegible] shallow cerebrovascular [illegible] anæsthetic and the pulse [illegible] imperceptible at the wrist [illegible] employed without any response [illegible] were dilated As soon after [illegible] after painting with iodine [illegible] through the [illegible] inserted between the left lobe of the [illegible] over the precordial area between [illegible] quick movements

The massage was commenced [illegible] minutes after the heart [illegible] to beat that being as near the length of time [illegible] to estimate After five minutes a [illegible] was felt which was [illegible] by others and by the end of ten minutes [illegible] Throughout this period artificial respiration [illegible] method and was continued in a modified manner after the heart [illegible] been re established certain rhythmical respiration [illegible]

Oxygen was now administered [illegible] gives, also a coffee and brandy enema [illegible] through and through saline [illegible] and with a regular but low tension pulse [illegible] and the pulse had improved the patient [illegible] he was in a semi comatose state [illegible] well At 1 30 a m December 9) he became suddenly cyanosed [illegible] at 1 45 a m

At the autopsy the base of the heart [illegible] over the left tegmen tympani A large [illegible] yellowish green pus was present in the left temporal lobe [illegible] substance shown degeneration for about a period of [illegible] The abscess did not communicate with the ventricle but did so with the temporal [illegible] small perforation in the tegmen tympani The middle ear was filled [illegible] mucopurulent matter There was no thrombosis of the lateral sinus [illegible] multiple calcareous nodules were found in the spleen substance nothing else abnormal was detected in the various organs

The case presents several interesting features in the first place there was no history of malaria which added to the difficulty of diagnosis and also the patient himself denying any previous ear trouble It seems reasonable to suggest that the intense headache complained of when the patient was on the sick list towards the end of November was due to commencing abscess formation—the initiatory stage of Macewan rather than to malaria

Although localizing signs may be absent or only slightly marked it seems extraordinary considering the site and size of the abscess that in this case there should have been such a complete absence of them and it was due to this absence of any such sign that it was decided to explore in the first instance the mastoid antrum and tympanum but unfortunately owing to the collapse of the patient this procedure could not be carried out

The cardiac massage which undoubtedly restored the patient, when other

methods had failed as not indicated in every case of cessation of the respiratory movements and later even during the administration of an anæsthetic and unless the abdomen is already open there is the risk of sepsis owing to the rapidity which is necessary, and again the liver may be accidentally wounded when making this incision still these should not deter one from performing the operation in suitable cases

The case is reported as although the patient unfortunately succumbed some six hours later the immediate result was quite successful

My thanks are due to Fleet Surgeon Baxter for permission to use his notes of the case before coming under my care

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AN UNUSUAL FORM OF INJURY

By Fleet Surgeon C B Fairbank, R N

The following case seemed worth recording owing to the unusual form of the accident —

A leading stoker, aged 29 was weighing himself on a spring balance, which was slung by a hook to a ring on the deck above during the dinner hour on April 7, 1916

For some reason unknown he fell with the balance and, in the act of falling, the pointer, which had a very sharp extremity, was detached from the dial of the balance, and was driven into the inner aspect of the left thigh entering the skin about 4 in above the knee joint at an acute angle directed downwards and outwards The length of the pointer was 1¾ in On examination, the flattened end of the pointer was seen in the mouth of the wound its lower end being apparently firmly fixed in the femur

A skiagraph was taken and showed the sharp end of the pointer embedded in the inner femoral condyle having penetrated the bone for a distance of about 1¼ in All efforts to remove it with forceps and pincers failed

The patient was therefore sent to the hospital ship the same evening There, under a general anæsthetic the wound was enlarged and the pointer successfully extracted The patient complained of scarcely any pain during the time he was on board after the accident

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MINOR MALADIES IN FLYING OFFICERS

By Surgeon A J Panter R N

During the past eighteen months having been attached to the R N A S under war conditions in Flanders my duties have led me into the hitherto somewhat misunderstood or perhaps more correctly, unpublished sphere of illness associated with flying Whilst many inexplicable symptoms attributed to lack of oxygen, and other obscure causes do undoubtedly occur, I have time and again been much impressed by the simple explanation of various ailments complained of by pilots as coming on whilst in the air, and frequently on questioning have obtained a history of 'leaking out of sorts' before going up Although there is nowadays an explanation for most of the fatal accidents occurring in the Air Services, there is always a percentage in which the cause remains a mystery I am convinced that, in a large proportion of these mysterious crashes, the cause is loss of consciousness by the pilot I have had at least four cases of pilots completely losing consciousness in the air Two of these 'crashed' on trying to land which apparently they did subconsciously, without severe injury to themselves the other two both lost consciousness at a

[illegible] [illegible] [illegible] [

[illegible] CASES OF NEURASTHENIA

[illegible] SWINTON, M.D., R.N.

[illegible] Royal Navy [illegible] tained in [illegible] is not surprising [illegible] increased [illegible] large number of officers [illegible] of life and the [illegible] stands to [illegible] It is hoped that [illegible] of our [illegible] the next two years will be [illegible]

[illegible] Lieutenant R.N.V.R. [illegible] the Western [illegible] spent his holidays fishing [illegible] small blessed with [illegible] a mild injury brought him to [illegible] the focus from which his [illegible] clinic up example of a com[illegible] and depressed. Physical [illegible] rather much pulse and [illegible] weakness that he was not really [illegible] management in his condition [illegible] health was good. He consulted [illegible] for [illegible] radiation from the epidiascope [illegible] patient's illness culminating in [illegible] completely wept, and said that [illegible] He actually did have some speech [illegible] only when firmly told to do so. [illegible] such as would [illegible] to hospital from [illegible] of many cases in many of these cases [illegible] patient suffered when on leaving his home [illegible] from his charge. His sense [illegible] that it would not have [illegible] murmur [illegible]

[illegible] well built and healthy looking [illegible] exceptionally brave and [illegible] Despite his healthy appearance [illegible] occasions for minor [illegible] constitutionally as he [illegible] his progress hung fire and [illegible] so and be unsympathetic [illegible] Yet this patient was tired [illegible] on any mental or physical [illegible] in this case were some [illegible] large and mobile pupil [illegible] would do him good but he [illegible] and remained there till he got [illegible]

[illegible] in this case [illegible] unemployed time and [illegible] on at being able to walk a mile and [illegible]

[illegible] complained of loss of memory and [illegible] physique with a nervous manner of [illegible] — a neurotic at sight. I found that [illegible] forgetfulness and was part of the general

lack of applica[illegible] signs except a quick [illegible] reflexes his appetite [illegible] he slept well There [illegible] incompatible with drug [illegible] found no [illegible] able to exclude this pos[illegible] complete [illegible] had suffered from some [illegible] of the right forearm, which attributed to a mild attack [illegible] fortunately it was amenable to treat[illegible]

The power of concentra[illegible] deficient in this case, and the patient told me that he [illegible] to a brown study even when [illegible] charge of his boat at sea [illegible] much time aboard his vessel [illegible] to allow his sub, a younger man to take both shares of shore leave Some domestic worry was admitted in this case and though he had lost a considerable sum of money since war broke out he said he did not worry about that now

Case 4, a sub lieutenant, R N V R aged 28, second in command of a motor launch, came to me one day on returning from patrol, saying that his nerve had all gone, and that he felt as if he would cry if any one spoke to him A thin dark man—of the nervous type this—who said he had a nervous breakdown before Pronounced tachycardia (110 per minute) was present, and there was a fine tremor of the fingers and tongue while the knee jerks were very brisk and the pupils large and mobile This patient had some worry owing to the illness of his wife I sent him to hospital

Case 5, a Canadian motor mechanic aged 18 employed on a small craft came under my notice owing to an abrasion of the chest caused when his boat was shook in collision during night evolutions The injury was speedily cured but the lad told me that he felt his nerve had gone Physical signs consisted solely in a rather quick pulse 80 exaggerated nervous reflexes, and mobile pupils Hoping that he would grow out of his trouble I toned him up and sent him back to work which only entailed his occasional presence in the boat but I was disappointed for his commanding officer told me that he was useless at sea owing to nerves Not wishing to fix the condition present by sending him to hospital I was fortunate in being able to arrange for this patient to be employed in the workshops instead of in the boat, and he has since done quite well

To describe more cases would be but to go over the same ground again and I trust I have said enough to give an idea of the entity known as oconsthenia met with by a medical officer afloat

Most text books regard neurasthenia as being due to worry or overwork, but I am inclined to look upon worry as a symptom rather than a cause of this disease Most of the worries of the neurasthenic are such as would be brushed aside by a more normal person nor does neurasthenia occur chiefly amongst the hardest working classes but in those who suffer from lack of occupation or who exist in environments tending to vitiate the physical well being

Case 5 is perhaps the easiest to understand for here we see the nervous equipoise of a youngster upset by an alarming adventure in which he might have lost his life Cases 3 and 4 certainly had some cause for worry in their domestic anxieties, but in neither did they attribute their illness to this cause Case 2 had a definite heredity taint while Case 1 being domestically happy and financially well off was driven to invent his worry in anxiety about his health

It is too often thought that neurasthenia is unaccompanied by any physical signs, but I have frequently been struck by the evidences of the low nervous tone existing in this disease which one can obtain by examination These signs consist chiefly in cardiac irritability, by which is meant the exaggerated response to stimuli either physical or mental briskness of the nervous reflexes and perhaps above all by the state of the pupils I venture to think that the eye is not sufficiently regarded as an index of the nervous system The eye is quite

as instructive as an indication of the state of the nervous [illegible] as the pulse of the circulatory, or the tongue of the gastro intestinal [illegible] A patient in whom the pupil is large and varying in size as he talks to you is giving first hand evidence of the fact that he is suffering from nervous or physical exhaustion either temporary as in the case of excitement or more permanently as happens in neurasthenia. I need hardly add that the converse of this is not true the small and steady pupil though present in health does not necessarily betoken this state

With regard to the treatment of neurasthenia the general line of treatment is too well known to require mention, but I consider no routine complete which does not provide for graduated exercises in mental concentration Weakness of the cardiac muscle does not contra indicate its systematic exercise in the Schott Nauheim treatment—quite the reverse—and similarly the deficient power of concentration so noticeable a feature in neurasthenia should be corrected by daily mental exertion The unoccupied, or if I may be permitted the metaphor uncultivated mind provides a fruitful soil for the growth of any weed of psychic trauma that may be present in the form of domestic disorder, or hypochondriacal worry The general desirability of taking the neurasthenic out of himself has long been recognized but no very active steps are usually taken to this end It goes without saying that the mental exercise should take as agreeable a form as possible for instance, the artistically inclined could be made to copy a drawing line by line for an increasing period every day in others the learning by heart of some poetry or prose would meet the case while practising to write with the left hand is interesting and possibly useful and in any case is more sensible than reading print upside down as was suggested recently in a medical journal as an exercise for educating the attentive control. In conclusion I would define neurasthenia as a state of nervous exhaustion of varying degree characterized by lack of the power of mental and physical application and evidenced by the physical signs of low nervous tone

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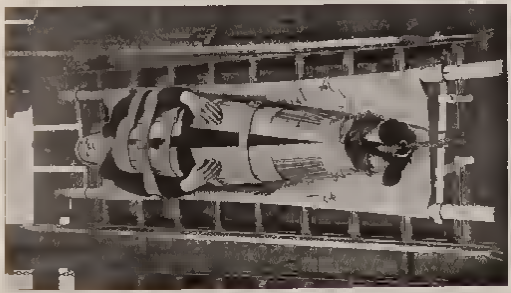
TRANSPORT OF WOUNDED ANOTHER USE FOR THE LONG BAMBOO STRETCHER

By Staff Surgeon G T Verry, R N

The difficulty of transporting wounded between decks, especially in light weather has been noted by several medical officers The dressing stations are situate in a central tube running fore and aft on the main deck and under protection, and are only accessible from the upper deck, during action by a narrow steep hatchway fore and aft at each end of the tube

Staff Surgeon J McA Holmes D S O has described in the Journal (vol 11 No 4 p 426) a canvas chute which he employed to assist the transport of wounded down the hatches, as it is practically impossible to *carry* them down without great loss of time or risk of accident, e g stumbling on the ladder when the ship is rolling or tripping up on loose ends of stretcher lanyards, possible contingencies in the hurry of an action

The long bamboo stretcher is of no use below as a stretcher at any rate during action owing to its size With a few additional fittings it makes an admirable stretcher chute while its uses as a stretcher or slinging cot are in no way interfered with After a few trials I have devised an effective fitting which seems as simple as possible and does not add to the bulk of the stretcher The fittings were made for me on board by the blacksmith, and comprise (1) A pair of folding hooks clamped to the upper crossbar of the stretcher, which hang on to the coaming of the hatch the hooks fold sideways in either direction by means of a belt and nut (2) A pair of hinged struts with a locked foot clamped to the lower crossbar which grip the edge of the ladder steps The struts must fold



[illegible]

[illegible]

[illegible]

[illegible] wood battens [illegible] ft 6 in apart The [illegible] on the spars [illegible] nailed by clout nails the ends of the [illegible] well to the wood [illegible] by cod line or nettle stuff Hammock [illegible] 7 ft 3 in to 8 ft 4 in to [illegible] ft 10 in

Stretcher poles can be made from [illegible] ash oars or 3 in by 3 in fir scantling [illegible] 1½ in by 3 in spars [illegible] into 3 in widths forms a [illegible] effect [illegible] The battens should be possible of teak though this is not absolutely necessary and they should be secured by 1½ in or 2 in screws (see fig 1 for details)

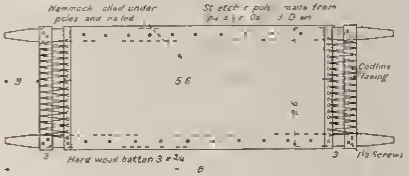


Fig 1

I am indebted to Mr H S Buer R N carpenter in my present ship, for the very clear account he has given me regarding the construction of these stretchers He informs me that they can be easily and quickly made and in his opinion proved to be more useful than any other form of improvised stretcher used during the rescue work after the Messina earthquake in 1905 They can be easily hoisted from a ship by means of a four legged Indian sling, with an eye spliced in each leg to be attached over the ends of the poles

Stretcher with Movable Battens

When on a visit to Malta in August, 1916 I was shown a stretcher made [illegible] in one of the field ambulances A stretcher of an old pattern which [illegible] in the Navy a few years ago had been altered and reconstructed so that a patient severely wounded could have his wounds washed and dressed [illegible] a minimum amount of movement his sufferings being thereby considerably [illegible]

As this stretcher is not issued to ships now, it is hoped that the following account will show clearly the method of construction It consists simply of two pieces of 3 in by 3 in fir scantling 8 ft 6 in long the ends rounded off to make handles 9 in long secured at the ends by battens 2 ft in length (see fig 2) placed and fixed as in the first stretcher described On the flat upper surface of the scantling are sunk 1 in apart, a series of battens 1½ in wide and [illegible] in thick, as shown in fig 2 Any number of these battens can be removed as they only lie in grooves and are not secured to the sides of the stretcher

A frame made of similar battens and 1 ft 6 in square the cross battens [illegible] 1½ in [illegible] next constricted N B—In making the frame it will be [illegible] advantage to secure the sides running on the length of the stretcher underneath the sides running across If this is done one or more of the battens [illegible] have been removed in order to let the frame into the stretcher can be [illegible] and the opening so reduced in size

To the under surface of th[illegible] l[illegible] is tacked rubber sheeting, wh[illegible] has previously been stitched to [illegible] shape of a cone leaving an open[illegible] of 8 in at the apex

When preparing the stretcher t[illegible] in a patient the position of the wound is noted, the battens that would oll[illegible] come under the wound are removed and the frame with the rubber sheeting stitched is inserted in their place The stretcher is next placed with the ends resting on boxes (see fig 3) or other suitable supports to keep it clear of the ground and the patient is placed on it

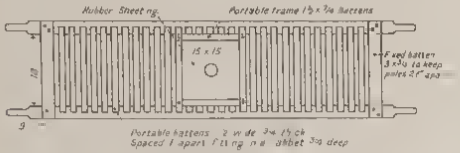


Fig 1

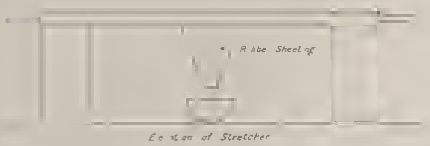


Fig 2

It will be seen that the wound can now be cleansed and the excess of antiseptic solutions drained off and directed by the rubber sheeting, into a vessel placed underneath the stretcher for the purpose When this process is completed the patient can have his wounds dressed and be removed on the same stretcher if necessary, to his bed in the hospital or the operation table The clean operating in the stretcher under the situation of the wound is convenient for adjusting dressings and bandage without the slightest disturbance to the

Extracts from Official Journals.

[illegible] Oswald Rees writes on Methods to Increase [illegible] Accommodation for Wounded in a Battle-ship

[illegible] a Committee of the Medical Officers of the Fleet [illegible] plan suggested by Staff Surgeon J Brugan Medical Officer [illegible] to use the accommodation for the wounded [illegible] was [illegible]

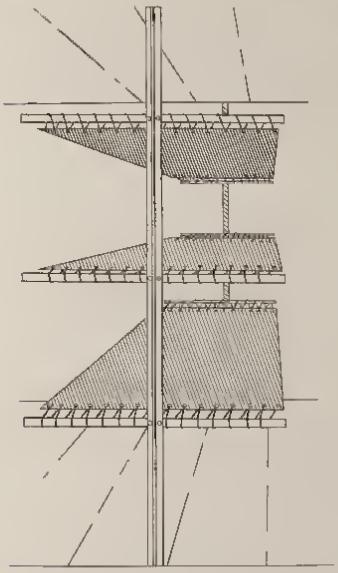


Fig 1

[illegible] President of the Committee, but the chief credit of the [illegible] Chief Surgeon S T Reid of the Hindustan [illegible] the [illegible] the formulation of arrangements in this ship

[illegible]

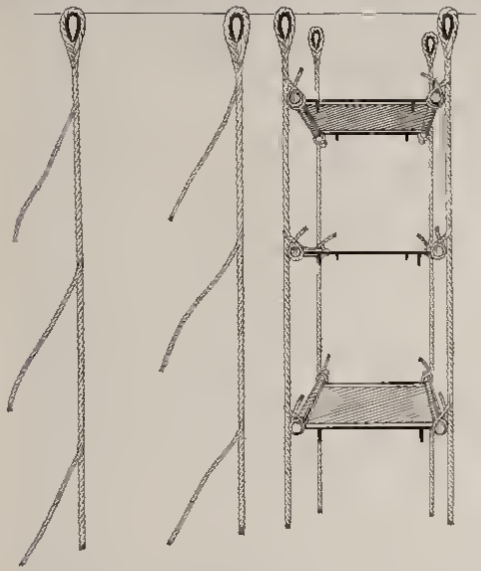


FIG. 2

each hammock It has not been found possible to arrange all the cot supports in like manner owing to the difficulty of passing between them to attend to the patients but we have provided for three such sets so increasing the accommodation to twenty beds Stretcher slings are arranged for six upper tiers

(2) *Gunroom* —Fig 2 shows the great simplicity of the stretcher slings in use in this ship They are made of manilla hemp 2½ in rope with three hundred yards of

[illegible] hanging [illegible] The end is [illegible] over a thimble [illegible] thimble is [illegible] the slings to the beams The beams in the [illegible] are for the [illegible] provided with lightening holes so that there [illegible] seen [illegible] the beams by wire straps fitted with hooks also [illegible] stretch [illegible] In the gun room however the iron beams [illegible] openings in the [illegible] Commander H P Boyd R N has designed a simple apparatus which enables [illegible] the cots in any position A length of target scaffolding [illegible] in the distance between the beams A broad wedge is [illegible] fitted well home above the wooden bar which is very effectually jammed in this way, and there is very little tendency for the wedge to work loose We experimented at first with wire slings but found them unsatisfactory owing to stretching The result was that after a short time the stretchers hung at all sorts of angles The simple lanyard allows each stretcher to be adjusted with perfect [illegible] and even lowering of the head or of the feet can be arranged for in each individual case A point of some importance The objection to rope slings is that they are liable to burn They are however not set up until after action and kept below the armour If a fire occurs in the compartment it is quite certain that wire slings will be rendered as useless as would rope ones The rope slings can be made almost while you wait while those of wire require days for their manufacture

Fleet Surgeon THOMAS AUSTIN writes on Provision of Morphia during Action, and on the Need for Organization of Sanitary Parties

A special provision of morphia was arranged for in case of emergency at the Gun Stations and Control Positions Two ¼ gr tabellæ of morphia sulphate were put up in the plain gelatine sausage shaped capsules supplied by chemists for the administration of certain drugs and four of these charged capsules were handed over in a sealed box to the officer in charge of each action station with directions how to pull open the capsules and administer the morphia by the mouth Running through each small sealed box (ordinary matchboxes were used in emergency) were four lengths of red tape the instruction being that after the administration of the two tabellæ to a severely wounded man a length of tape was to be tied loosely round the patient s neck to indicate that a dose had been given

There is a very considerable difference of medical opinion as to the advisability of allowing morphia to be administered by unprofessional hands and also as to the quickness of action of the drug when given by the mouth Personally I am not in favour of anyone being put in the way of less access to any narcotic drug As to its action when given in tabellæ form by the mouth I know that some medical practitioners do use this method to their complete satisfaction and so when all the factors of a successful fight are considered, I am ready to sacrifice any bias I may have and give the readiest first aid means at my disposal when expected to do so This method can be entrusted to soiled and clumsy hands, and I think the red tape is turned to a useful purpose

Instructions given to Officer of Action Station ' The sealed (match) box marked MORPHIA contains capsules for four badly wounded men Each capsule contains two pellets—the dose for one man Pull the capsule lengthways to open Drop the pellets into the man s mouth Tie a strand of red tape loosely round his neck to indicate that the drug has been given Account for the remainder to the Medical Officer

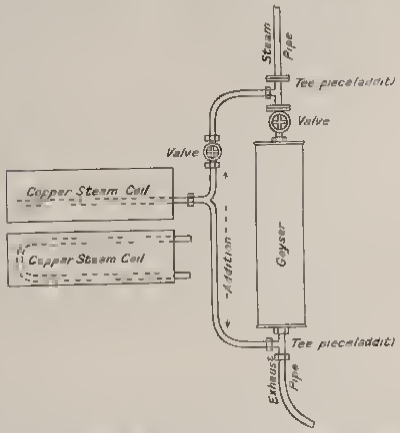
* *

In organization of Sanitary Parties I am fully persuaded that there is real need for a Sanitation Branch of the Naval Medical Service Ships companies have yet to learn that such work is neither haphazard nor a burden but the means to health and happiness, needing conservation of methods and intelligent co operation in application

I have attempted [illegible] other journ[illegible] on of sic[illegible] a branch with its div[illegible] sanitary s[illegible] the detail of health guards for ship[illegible] In spite [illegible] methods of individual efforts a[illegible] Unfortu[illegible] that [illegible] ships are being hasp[illegible] of [illegible] ship favor of the present [illegible] fully [illegible] the [illegible] excellent routines of [illegible] that a recognized Sanitary Service is a[illegible] encampment, and that such would have [illegible] in the Army

Staff Surgeon C V Griffiths wr[illegible] and Steam Geyser on board

I have suggested that at the next refit a [illegible] method of the late Fleet Surgeon A A Forrester R N, published [illegible] the Journal April 1916 suitably adapted for our gen[illegible] The modifica[illegible] suggested is [illegible]



Diagrammatic view of proposed modification of sick bay gear for sterilizer

have a permanent tray with copper piping into which the sterilizer fits placed in the sick bay and dressing station in place of the disconnecting method addition this would not damage the sterilizer The benefits of such a method are as already pointed out in Fleet Surgeon Forrester's article Also one would h[illegible]

[illegible] employed

Fleet [illegible]

[illegible]

[illegible]

[

[illegible]

[illegible] to [illegible] possible [illegible] with [illegible] and [illegible] effective tissue is highly [illegible] advocated when picric acid [illegible] evaporation is checked and [illegible] cous

Pituitrin —A [illegible] in all cases of shock from severe injury [illegible] now that pituitrin is by far the best [illegible] shock

Ispiram, Intrapin —[illegible] is supplied [illegible] should be added as astringents and to [illegible] applications of headache, neuralgia, sciatica [illegible]

Calcium lactate is not supplied [illegible] for [illegible] of eyelids [illegible]

Ointments —These are very limited [illegible] the addition of [illegible] Borocis Ung Hydrarg Ammon [illegible] zinc ointment [illegible] present laboriously made on board [illegible] To do this [illegible] has to be ground by hand [illegible] like so good [illegible] ordinary article of commerce

Tar Preparations —Not one is supplied [illegible] Detug would be a useful addition

Menthol or Chloretone —One of these is very [illegible] to use with paraffine as spray or injection for laryngeal and nasal [illegible] Menthol is very useful also with chloral and camphor as a soothing application [illegible]

Salicylic Acid —Required as the active principle [illegible] also useful for making up as an ointment for seborrhœa

Novocain or Stovain —Any local anæsthetic put up [illegible] seems to very quickly lose all potency When using local anæsthesia for minor operative work, it is more satisfactory to make up the solution fresh from either of these drugs, adding if necessary a few drops of adrenalin Both of these drugs while nearly as efficacious as cocaine are ten times less toxic

Mustard Leaves —The lack of these is frequently experienced They can be supplied in hermetically sealed tins which keep good in any climate

Labifax (Messrs Burroughs Wellcome and Co) —A lubricant for catheters put up in squeeze tubes with screw cap One tube would last a commission

The above suggestions apply only to peace time In war time I have had no difficulty by sending in special demands in obtaining almost everything I require

Reviews.

INS[illegible] IN EVERY [illegible] PRACTICE. By E. G. Younger, M.D., [illegible] C.P. Lond. D.P.H. [illegible] Senior Assistant Medical Officer, London County Asylum, Banstead; formerly Assistant Medical Superintendent, Metropolitan District Asylum, Caterham; Member of the Medico-Psychological Association of Great Britain. [illegible] Baillière, Tindall and Cox. Fourth Edition. 1917. Pp. x + 111. Price 2s. net.

The last three editions of this little book have been produced since 1904 [illegible] the high estimation in which it is held by the medical profession. It is [illegible] mainly for the [illegible] instruction of general practitioners, including of [illegible] the vast majority of [illegible] and military medical officers. The broad out[illegible] only of insanity are dealt with in this work which is not intended to be [illegible] reference but rather a guide to every day knowledge in a mode held [illegible] practice.

The present edition has been revised and brought up to date by the addition [illegible] sections on Neurasthenia and on Psychoanalysis, the former is a [illegible] which is very much under discussion in these days when every newly [illegible] medicine is associated with its own peculiar effects on the nervous [illegible] of both those who use it as a weapon and also those who are attacked [illegible] there is a doctrine which has led to strong differences of opinion and [illegible] fierce feeling, all exists while its exponents admit that the [illegible] themselves is a tedious one occupying at least an hour a day per patient [illegible] It is most likely therefore that general practitioners will find the [illegible] such assistance to them in the quick and accurate diagnosis of an [illegible] for the purpose of dealing promptly and successfully with it [illegible] rather all the main object of this little work which we consider [illegible] in view.

[illegible] PSYCHOANALYSIS. By C. G. Jung, M.D., LL.D. Formerly of the [illegible] Zurich. Translated and edited by Dr. Constance E. Long. [illegible] Second Edition. London: Baillière, Tindall and Cox. 1917. Pp. xxvi + 449. Plates 1 coloured. Figures [illegible]. Price 15s. net.

[illegible] collection of papers gathered together from various sources [illegible] years. The merit of the discovery of the new analytical [illegible] psychology belongs to Professor Freud of Vienna, but his [illegible] many essential modifications, some of them owing to [illegible] by Dr. Jung in spite of the fact that the Professor him[illegible] the standpoint at this school.

In [illegible] chapter on "The Concept of the Unconscious" [illegible] general orientation of a most important problem in [illegible] the return of the psychological ego to the psychological non-ego. [illegible] has been radically altered and the opportunity has been taken [illegible] article that describes the results of more recent research.

Dr. Jung [illegible] practical work is to confine himself for some time to the [illegible] He then abstracts as generalized a formula as possible [illegible] collected obtaining, from it a point of view and applying it in his [illegible] until it has either been confirmed, modified or else [illegible] confirmed he publishes it as a general view point [illegible] empirical material. The only introduces the material amassed

[illegible] in the form of examples or illustrations. The [illegible] therefore should not consider the views he presents as mere fabrications of the author's brain. They are as a matter of fact the results of extensive experience and rigid reflection.

The book is full of interesting food for deep thinking and will appeal to those who desire to improve their knowledge of this important subject.

THE THYROID GLAND IN HEALTH AND DISEASE. By Robert McCarrison, M.D. (R.U.I.), D.Sc. Bell, F.R.C.P. Lond., Lauréat de l'Académie de Médecine, Paris; Major, I.M.S., London: Baillière, Tindall and Cox. 1917. Pp. xviii + 286. With 32 illustrations. Price 12s. 6d.

The author has devoted some fourteen years to the study of the thyroid apparatus and its diseases. He has investigated the etiology of its maladies from the combined epidemiological, clinical, experimental and pathological points of view. Years of extensive epidemiological research brought to light certain facts which suggested an infectious or toxic origin for some of the thyroid's most common disorders. Clinical experience during the same period added further facts which strengthened this supposition; observations on man and experiments on a large scale on animals converted the supposition into what he believes to be fact, and pathological studies have once confirmed his belief. His work on the normal thyroid gland has elucidated a number of important points relating to the gland's normal range of physiological action and so it becomes possible to interpret the pathological changes to which various experimental procedures had given rise.

His results have been independently confirmed by the work of Marine, Tenbart and Gayford in America, by the researches of Messerli in Switzerland, by Sazahi, working under Wilms of Heidelberg, and Wegelin of Berne. These diverse but complemental investigators bring out the great fact that the most common source of the thyroid's derangement is gastro-intestinal toxæmia, and this within recent years has received further striking confirmation from the surgical procedures of Sir Arbuthnot Lane. The author presents to the reader a simple and connected account of the place of the thyroid gland, including the parathyroid glands in the human economy, and of the disorders to which these organs are subject.

The volume is divided into three parts. The first dealing with the anatomy, physiology, functions and life history of these glands; the second with the factors which cause their to depart from health; and the third with the morbid states including not only goitre and cretinism but also tetany, myxœdema and Graves' disease, which result from this departure. The appendix contains two series of cases showing the effects of the intestinal antiseptics on goitre as well as a brief summary of the more important epidemiological and experimental observations made by the author. Among the factors discussed in Part II are defective or improper food supply, residence in insanitary surroundings, influence of bacterial and other toxins, infectious and other diseases, influence of intestinal toxæmia, consanguinity and heredity and psychic influences.

The book is printed in excellent type and is beautifully illustrated by a large number of remarkably good photographs; it is a very valuable contribution to medical literature.

ANÆSTHETICS: A PRACTICAL HANDBOOK. By L. Hombleh, M.D. Cantab., Senior Anæsthetist and Lecturer on Anæsthetics in St. George's Hospital. 2nd Fourth Edition. London: Baillière, Tindall and Cox. 1917. Pp. 137. With 22 illustrations. Price 4s. net.

This work, as in previous editions, is intended to help students and practitioners who are not specially versed in anæsthetics. It is therefore, an eminently practical handbook and gives only a brief description of those new methods, such

[illegible] and [illegible] and [illegible] with [illegible] [illegible] [illegible]

[illegible]

[illegible] chapters are [illegible] appropriate treatment [illegible] chapter [illegible] reading, for the ordinary [illegible] performed but that is [illegible] some things that can [illegible]

There is an excellent [illegible] now is not treated by [illegible] exhaustion and treatment [illegible] failure, but where the [illegible] from the deeps to which [illegible]

In conclusion I hope [illegible] that this [illegible] medical colleagues [illegible] work of the [illegible] helping the latter to [illegible] connexion with the [illegible]

ELECTRO THERAPEUTICS. By Major [illegible] Hospital [illegible] Walton [illegible] L.R.C.P., Temporary Captain R.A.M.C. [illegible] Ltd. 1917. 1p. [illegible] 18. Price 3s. 6d. [illegible]

This small volume will be of some help to the [illegible] Electro Therapeutic treatment on a small scale. It [illegible] in the Services of the usefulness of the above [illegible] inexpensive installation [illegible] apparatus in [illegible] source of galvanic [illegible] thereby making himself independent of electric [illegible] description of electrical nerve testing, he lays [illegible] muscles employing [illegible] the mixed galvanic [illegible]

The following chapters deal with the treatment of [illegible] neurasthenia, fibrositis and trench foot. Illustrations [illegible] his practice in military hospitals during the last [illegible] ionization of which he [illegible] over the whole or [illegible] the length of the [illegible] on large cerebrum and [illegible] applications are not less [illegible] He employs chiefly sodium salicylate for neuralgia and [illegible] in the case of trench foot [illegible] hydrochloric [illegible] is a considerable amount of information compressed into the small compass of this book.

H.

[illegible] (Long [illegible] Hoe [illegible] Churchill [illegible]

[illegible] nursing and [illegible] and examina [illegible] Th [illegible] nursing is [illegible] ppied [illegible] general [illegible] system [illegible] this wo [illegible] practical [illegible] to introduce [illegible] duties [illegible] practice Section I is devoted to [illegible] [illegible] onal surgical nursing, Dr N D [illegible] practical account of massage and [illegible] mary of instruction on such sub [illegible] tion of Linous eurmata leads [illegible] mico water Ac The laboratory [illegible] is put before the reader in a [illegible] Th [illegible] is well produced and the illustra [illegible] Where all the teaching is sound it is difficult [illegible] lecture but the very instructive chapters on [illegible] ligatures lotions the operating theatre, the [illegible] ors—immediate and remote—should prove partic [illegible] lot to members of the Royal Navy Sick Berth Staff who are studying for [illegible] lying examination for operation room attendant.

[illegible] Series Third Edition Edinburgh E and S Livingstone Price [illegible] net

[illegible] of the earlier numbers of this series have been reviewed in a previous [illegible] of this Journal The remainder follow on the same lines by imitating in [illegible] form the tutorial methods of a coach The handbooks themselves are inexpensive and handy The information supplied is expressed in a concise and [illegible] manner difficult points being dealt with more fully by means of simple diagrams The possession of such qualities explains their undoubted popularity among those preparing for examinations If read in conjunction with a sound text book their value is considerably enhanced whereas if used exclusively, many of their brief unqualified statements would appear dogmatic and so lead to blunders More care in revision would remove such errors as "Mosquitoes, the principle cocci and [illegible] spem

Surgery —Part III The surgery of the scalp cranium brain and membranes, vertebral column, spinal cord oesophagus thyroid gland, larynx, trachea and [illegible] is condensed into seventy six pages It will therefore be evident that only the fundamental facts are set forth The tabulation of differential diagnoses [illegible] the correlation and association of limbs in connection therewith The [illegible] of glaucoma and cataract under diseases of the eye is a serious one [illegible] syphilis ought to be worthy of a place among the varieties of ulcers

Surgery —Part IV The contents comprise the surgery of the abdominal wall [illegible] genito urinary system liver gall bladder and bile ducts pancreas [illegible] The sections dealing with kidney and gall bladder are among the best [illegible]

Surgery —Part V By Captain C R Whittaker R A M C F R C S Ld [illegible] Volume includes chapters on hernia rectum stomach duodenum and [illegible] Hernia is well stated the diagrams being remarkably clear Such [illegible] as Mouton's test Lane's kink and Jackson's membrane are fully explained

[illegible] —Parts II III and IV Se[illegible] II deals with [illegible] and tumours Part III with diseases [illegible] lymph glands [illegible] heart, pericardium and [illegible] inflammation [illegible] and diseases of the bronchi and [illegible]

[illegible] little books contain a large amount of useful [illegible] which is [illegible] reading while examining pathological specimens

[illegible] —Part III Second Edition The volume [illegible] of descriptions of official preparations, pharmacology and therapeutics [illegible] is good and [illegible] are set to such a way as to bring forward points which are [illegible] overlooked

LECTURES ON MEDICINE A HANDBOOK FOR NURSES By Charles Wilson M D F R C P E Lecturer on Clinical Medicine Edinburgh [illegible] Senior Assistant Physician Royal Infirmary Edinburgh Edinburgh [illegible] and 5 Livingstone. 1917 Pp viii + 295 Price 4s 6d net

Among the many handbooks written for the education of nurses this volume should occupy a prominent position by reason of its practical nature The various symptoms of disease are aptly illustrated by short abstracts from clinical cases which tend to impress the memory and stimulate the powers of observation The subject matter should not be considered as an elementary guide to knowledge since it is intended rather for those who have passed through the preliminary training in the usual ais of anatomy and physiology The publication of such a work in these days when such a large number of women have taken up nursing as a profession will be welcomed by all Some parts may appear too advanced but as the author remarks the more completely nurses are equipped the less likely are they to exceed their legitimate sphere of work an observation which very will deny

The book itself is printed in clear type and is well bound while the illustrations of radiograms, pulse tracings, and clinical charts could not be improved

FORMULARY OF CERTAIN DRUGS USED IN THE SURGICAL TREATMENT OF TROPICAL DISEASE By T F G Meyer M R C S Eng , L R C P Lond , Senior Medical Officer, Sierra Leone Freetown Government Printing Office 1917 Pp xiii + 91 Price 3s 6d net

The author informs us that this book was begun in the Cameroons with the needs of medical men serving for the first time in the Tropics in view and in the hope that they might regard the book as a basis for the collection of other formulæ It contains a varied selection of drugs and their preparations all of which are useful in the surgical treatment of disease as met with in the Tropics and many of them essential Under each preparation or drug valuable information is afforded as special points in action and method of use which will be found of great assistance and easy for reference Also in several instances, a short account is given of the special technique of treatment required such as the intramuscular and subcutaneous injection of quinine the administration of salvarsan &c Scales are appended which show at a glance the relationship between the metric and the English systems for instance if the reader wants to learn the relative quantity of 250 c c he has only to turn to the second scale to find that the relative quantity is just under 9 oz In the tenth scale Cent grade—Fahrenheit there is unfortunately a mistake, the normal temperature mark not being in quite the correct position

Though some of the drugs mentioned may be difficult to obtain at the present time medical officers serving on tropical or sub tropical stations will find this little book of great assistance as a means of ready reference

The Indian Operations of Couching, being the Hunterian Lectures delivered before the Royal College of Surgeons of England on February 19 and 21, 1917. By [illegible] M.D., B.S. London, Sc.D. Dublin, F.R.C.S. Eng., [illegible] (retired) late Superintendent of the Government Ophthalmic Hospital, Madras, Professor of Ophthalmology, Madras Medical College, Fellow of the University of Madras, Honorary Member of the American Academy of Ophthalmology and Otolaryngology. London: H. K. Lewis & Co., Ltd. 1917. Pp. xii + 94. With 45 illustrations. [illegible] 7s. 6d. net.

The author of this work has had exceptional facilities for studying the operation of couching in India and he possesses the [illegible] of a large collection, statistics and ability to present them [illegible] form.

The book divides itself naturally into two parts, the first being the Hunterian Lectures of 1917 embodying the pathological anatomy of cataract based on an examination of fifty-four excised globes. There are several [illegible] plates with photographs of divided eyes and microscopical sections [illegible] which the author puts forward some noteworthy views [illegible] physiology of the eye and the mode of spread of infection in the various [illegible]. Dr. Elliott appears to find no place for the operation of [illegible] in present day practice, although he admits the extreme rarity of sympathetic ophthalmia following the operation. Certainly the methods adopted by the native couchers are highly reprehensible, and it cannot be objected that he has received anything but a fair and impartial trial at the hands of the author, who makes a strong plea for legislation directed against the coucher.

Abstracts and Translations

Manson (H. H.). A Report upon the Use of Atropine as a D[illegible] in Typhoid Infections. Special Report Series, No. [illegible]. Medical Research Committee, National Health Insurance. 1917. Pp. 50.

This is an expansion of the preliminary paper published in the *British Medical Journal* of November 25, 1916, and is based on the subcutaneous injection of atropine into more than 1,000 suspected cases of typhoid or paratyphoid fever. In a person not so affected the hypodermic injection of [illegible] atropine is after ten minutes constantly followed by a rise in the pulse rate of rarely less than twenty and often of thirty beats per minute; this reaches its maximum in about thirty minutes and then gradually subsides; the pulse becomes normal in an hour or so. In typhoid and paratyphoid patients it may not be till the third day to the end of the second week; the important practical fact is that for diagnostic purposes, this quickening of the pulse does not occur even though the patient has been inoculated against the disease some months previously. The rise of [illegible] rise to the pulse rate of fourteen beats per minute by the injection [illegible] diagnostic of infection whereas a rise of fifteen or more beats [illegible] is negative. In 141 cases of the enteric group in which the micro-organism was isolated a positive atropine reaction was obtained [illegible] days in advance of the bacteriological diagnosis. This test does not [illegible] from paratyphoid infections. Inoculation against the disease [illegible] but antityphoid inoculation produces a positive atropine reaction after [illegible] three days which may last from two to five weeks. It appears that the response of the heart to atropine is deficient or absent only during the stage when the patient is failing badly to respond to bacterial poisons which then exert a depressing influence directly upon the intrinsic rhythmic cells of the heart; at the same time blocking the vagal control of the heart so that the heart is [illegible] full speed with or absolutely to mobbly the heart into [illegible] because the heart itself is poisoned. Some comparative tests with [illegible] serum in enteric patients the normal quickening of the pulse [illegible] intravenous injection of adrenalin, blood pressure, and [illegible] in normal acceleration of the pulse following.

The atropine test is very simple. The patient remains horizontally [illegible] throughout the test which is not made until [illegible] hour or [illegible] the pulse is counted until it is found to be steady; [illegible] atropine [illegible] dermically, preferably over the triceps to [illegible] at an interval of twenty-five minutes the pulse is again counted [illegible] it is clear that any rise which may have follow the injection has [illegible] fifteen or twenty minutes may be necessary for this purpose when the pulse rate is noted at the first count.

H. D. P.

Fraser (P.) and others. Report upon Renovated Cases of Intestinal Disease received from the Eastern Mediterranean at the Royal Naval Hospital, Hislar, December 1915 to April 1916. Special Report Series No. 1. Medical Research Committee, National Health Insurance. 1917. Pp. 126.

This report deals with the examination for bacterial infection of nearly 1,300 men almost exclusively convalescent on arrival at Malta, sent home from the Eastern Mediterranean on account of intestinal disorders. The objects of the

investigation were [illegible] until the men had had any bacillary intestinal disease and if they could [illegible] fit to duty without exposing other men to any danger of infection It was [illegible] possible to examine the men systematically for evidence of protozoal disease [illegible] is inclusions which must be reckoned as accounting for some of the 61 6 per cent of cases not diagnosed bacteriologically

The diagnosis of [illegible] infection by organisms of the enteric and dysenteric groups was [illegible] based almost entirely on agglutination tests as the number of cases recognised by examination of the excreta were small The use of this method is complicated by the frequency of anti typhoid inoculation the agglutinins of which are not directly distinguishable from those occasioned by disease This difficulty was met by the construction of comparative curves of the agglutinin reactions as modified by time in inoculated men who were not known to have had intestinal disorders (normals) on the one hand, and of inoculated abnormals namely men who had had intestinal affections in the East on the other and from these it was deduced that in such cases a positive result to a dilution of 1 in 125 cannot be taken as evidence of typhoid infection unless the inoculation dates from at least twelve months before and that a positive result to a 1 in 250 dilution indicates infection with *Bacillus typhosus*, except within six months of inoculation Thus estimation of the significance of the serological reactions rests on the side of negative rather than of positive results Further agglutination tests are much more distinct in the case of infections with the entire than with dysentery bacilli, especially the Flexner variety as the latter are commonly agglutinated to some extent by the serums of persons not known to have had dysentery

The statistical results showed that out of a consecutive series of 1,107 men typhoid infection had occurred in 13 2 per cent, paratyphoid A in 10 1 per cent paratyphoid B in 9 per cent Shiga dysentery in 1 2 per cent and Flexner dysentery in 9 7 per cent In 61 6 per cent the previous condition could not be diagnosed, in some of the cases there were multiple infections so that there were 1 163 cases of disease among the 1 107 men Thus probably a third of the men had typhoid or one of the paratyphoid fevers paratyphoid A being probably the commonest and 11 per cent at least had bacillary dysentery which when allowance is made for the under estimation of the Shiga infections was probably equally divided between the two forms Antityphoid inoculation appears to reduce the incidence of the disease in the proportion of 3 to 1 during the first year after inoculation As after this interval no protection is provided, men if likely to be exposed to infection should be re inoculated The appendix contains a description of a scheme for routine bacteriological examination of the excreta which was evolved from the experience gained during the investigation and is much simpler than that then employed H D R

Burke (A H) Thomlinson (R T) and Lawson (R A)—Septicæmia due to *Micrococcus tetragenus* as a Cause of Pyrexia at the Front *Quarterly Journ of Med*, Oxford 1918 19, vol x pp 1 6

The most prevalent illness at the front in France at present is continued pyrexia of obscure origin, which apart from bacteriological evidence is of two main types one clinically resembling paratyphoid fever the other trench fever The authors state that a large proportion of these pyrexial cases are septicæmia due to *M tetragenus* the pneumococcus or streptococcus Tetragenus septicæmia is the most frequent in 100 consecutive cases of obscure fever it was isolated from the blood in pure culture in 20 This infection is especially prone to attack those already debilitated and there is some evidence that it spreads from man to man as orderlies in hospitals are liable to contract it The onset is sudden or less often insidious, with pain in the head loins and lower limbs

[illegible] tenuitness [illegible] Pl[illegible] hypothesis [illegible] from the blood [illegible] [illegible]

GREIG (L. [illegible] W.) — On the Effect [illegible] Tertian [illegible] Malarial Parasites [illegible] 1917 [illegible] pp. 234, 238.

It has [illegible] L. Rogers that [illegible] the blood after [illegible] intravenous injection [illegible] of tertian [illegible] a man with [illegible] malarial infection [illegible] benign tertian [illegible] gametes [illegible] intravenous injection of tertian tertiaria [illegible] by Low and Nicolle [illegible]

DELACOUR (Les Rupture du Tympan par Commotion [illegible] Vol. [illegible] 1917, [illegible] pp. [illegible])

When [illegible] by which the mouth is shaped and the [illegible] affected. The mouth [illegible] shrapnel [illegible] sudden air pressure [illegible] which [illegible] fragments of projectile [illegible] from the front [illegible] into the mouth [illegible] is an extremely [illegible] element to penetrate [illegible] pass through [illegible] life of the wounded [illegible]

Up to the present [illegible] concerned an Alsatian [illegible] into the interior of the [illegible] front a receiver is [illegible] about 1 cm. from the [illegible] from the front on [illegible] contact with the tympanum [illegible] bursting in the neighbourhood of the [illegible] had been ordered to be [illegible]

Air can act [illegible] it produces similar effects [illegible] the internal ear has been [illegible] of cophosis and vertigo [illegible] labyrinthine concussion [illegible] easy to distinguish [illegible] concussion from cerebral concussion [illegible] but even by tremor [illegible] quickly enough while the [illegible] this. What I particularly wish to [illegible] tympanic membrane by air concussion such as can be produced by the explosion [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

The [illegible] tympanic ruptures fro[illegible] suffered previously a[illegible] [illegible] sistance

[illegible] of the tympanum wi[illegible] to [illegible] Suppuration of the [illegible] which [illegible] to avoid

Acut[illegible] as a rule return to what it [illegible] the membr[illegible]

The [illegible] consequences in order of duration [illegible] go [illegible] in the [illegible] overall suppuration of the middle ear [illegible] established

News of the Service.

BIRTH

[illegible]

HONOURS AWARDED

[illegible]

HIS MAJESTY THE EMPEROR OF JAPAN

[illegible]

HIS MAJESTY THE KING OF THE FRENCH REPUBLIC

[illegible]

HIS MAJESTY THE KING OF ITALY

[illegible]

PROMOTIONS

[illegible]

APPOINTMENTS

SEPTEMBER

[illegible]

Hercules W [illegible] A M [illegible]
Sandham M B [illegible] Nagle [illegible]
the Ist broke add [illegible] J [illegible]
[illegible] Soulan D W [illegible]
[illegible] J [illegible]
[illegible] to the Ser [illegible] add
[illegible] Dix [illegible]
[illegible] R W [illegible]
[illegible] A W [illegible]
[illegible] the C [illegible]
[illegible] A [illegible]
[illegible] to Chatham [illegible]
[illegible] Wellington A C [illegible]
[illegible] S M [illegible] Hood [illegible]
[illegible] lord [illegible]
[illegible] A W [illegible] the Hon J W [illegible]
[illegible] lord W [illegible]
[illegible] S S Smith [illegible]
[illegible] R Mac [illegible]
[illegible] Bolle M [illegible]
[illegible] W [illegible]
[illegible] R [illegible]
[illegible] Melg [illegible]
[illegible] R M [illegible]
[illegible] L Sa [illegible]
[illegible] W S [illegible]
[illegible] W [illegible]
[illegible] M [illegible]
[illegible] A [illegible]
[illegible] W [illegible]
[illegible] W S [illegible]

[illegible] F [illegible]
[illegible] H Dan [illegible]
[illegible] H A Kell [illegible]
[illegible] H Hayes to [illegible]
[illegible] McCoyer M [illegible]
Pembr [illegible] D Turner [illegible]
J R Mel [illegible] M H to the S [illegible]
to the Hon [illegible] A Sundges M B [illegible]
Hospital
[illegible] J Carr M B to [illegible]
[illegible] R Shaw J M B B to the [illegible] Medical Department
Mu [illegible] A t J M T O C M [illegible]
[illegible] the [illegible] ok add
[illegible] A R D J W [illegible] Nuttall to
[illegible] add A P W Hitt [illegible]
[illegible] Stig [illegible] A R Mel [illegible] J Kirkr to H [illegible]
[illegible] J Hal J R Real [illegible] M W A Mills [illegible]
[illegible] J M Clelli to the [illegible] W G Wa [illegible]
[illegible] S T Baker to the [illegible] Manges J R [illegible]
[illegible] ok add A M [illegible] A Mallan Walker to the

[illegible]

[illegible]

[illegible]

ADMIRALTY ORDERS ISSUED FROM SEPTEMBER 1 TO NOVEMBER 30 1917

(Only the more important Orders pertaining directly to the Medical [illegible] are included.)

*3105.—Transport of Naval Sick and Wounded

(M.H. 10280/17.—21.8.1917.)

[illegible] baggage labels and all correspondence relative to the [illegible] Sick and Wounded [illegible] which this case belongs should always be [illegible]

(2) In the case of a small craft with a permanent ship the nominal [illegible] parent ship [illegible] stated (in lieu of the name of the ship in which the patient is actually [illegible] pleasant or [illegible] Sick Bay.

3274.—Medical Examination of R.N.R. Ratings

(M.H. 9000/17.—7.9.1917.)

Owing to there being no special space provided in Forms H.V. and H.R.V. for a [illegible] tional that Medical Officers examining candidates for enlistment in the H.N.R. [illegible] physical defects which do not debar the man from enlistment.

In consequence there is a danger that men may subsequently claim upon the Admiralty [illegible] Dangerous and [illegible] defects have arisen in and are due to the Service.

(2) Such defects should be recorded on the medical form in Section (F) "Certificate by Medical Officer."

3346.—Destroyed Supply.

(M.H. 29[illegible].—14.9.1917.)

In cases where the M.O. 3rd 1st Medical Officers do not appear [illegible] to appear in the last [illegible] during the future [illegible] necessarily be sent to the respective depots [illegible] fitted. Article [illegible] paragraphs [illegible] and 8 [illegible] Order in position from which it will be seen that in the [illegible] a supply [illegible] be made on [illegible] 1160 to the Senior Medical Officer at the depot to which the man belongs and that an intimation will be sent from the depot to the ship or establishment giving particulars of the further action to be taken.

(M.O. 8850/17 and 3561.)

3387.—Throat Sprays

(M.H. 10416.1.—14.9.1917.)

Government spray providing for the throat [illegible] allowed to each ship bearing a medical officer. A demand for the spray is to be forwarded to the naval hospital at the port on which the ship is based.

3462.—Medical History Sheet

(M.H. 11038/17.—21.9.17.)

The attention of Medical Officers is called to Admiralty 3310 K.R. & A.I. (Medical History Sheet Form 1901) and paragraph with regard to the following points:—

(1) All vittings on entry or on entry into the Service are to be provided with a Medical History Sheet in the Medical Office.

(2) Medical Officers are to ascertain that each rating has a Medical History Sheet and that it accompanies his papers on transfer from one ship or establishment to another.

(3) Medical History Sheets are to be kept thoroughly up to date.

(4) The Medical History Sheet is invariably to be forwarded to the Medical Director General on death, final invaliding, discharge from the service or demobilization of a rating. (In many recent instances this has not been done, with the result that great inconvenience has been caused.)

K.R. & A.I. Art. 1310.

[illegible]

3495.—Drinking Water—Measures to Ensure Purity

(N S 220^S 17.—21/1/1917.)

[illegible] being required for water sterilizers in future to be stowed and [illegible] No. 33 (medical pattern) is considered desirable for this purpose, [illegible] for Home Yards are to be ordered direct from Messrs. [illegible] of Glasgow, contract dated 2nd. [illegible] 1914, C.T. 8465 (Schedule [illegible]) [illegible] be filled in the dockyards from fresh filtered water, chlorine of lime [illegible] stored with wire or spring, and the bottle made watertight by [illegible] paraffin wax. The necessary steps should be taken to provide dry stowage [illegible]

All articles should be returned to the dockyards [illegible]

3541.—R.N.A.S. Ratings proceeding on Foreign Service—Medical Examinations

(M.D. 9896/17.—28/9/1917.)

When R.N.A.S. Ratings are detailed for Foreign Service, the Medical Officer of the Station whose duty are proceeding is to satisfy himself that they are in all respects fit for active service in the Station to which they are being drafted, and that they are not suffering from any disease which renders them unfit for foreign service. Ratings suffering from old head injuries are not to be sent to Stations in the climates of which are likely to intensify the effects of such injuries.

3762.—Surgeon Probationers, R.N.V.R.—Passage &c.

(C.W. 28187.—19/10/1917.)

Surgeon Probationers serving abroad who are allowed to be demobilized in order to qualify [illegible] will be allowed passage for themselves and their successors at public expense [illegible]

(1) That their term completed twelve months service.

(2) That they give a guarantee to resume Naval Service on qualifying.

In other cases Surgeon Probationers will not be entitled to repayment of any of the passage [illegible] expenses incurred in connection with their demobilization.

(M.O. 3346/16 is cancelled.)

3877.—Unserviceable X-ray Tubes—Disposal.

(M.D. 11976/17.—26/10/1917.)

Defective or unserviceable X-ray tubes are to be condemned for destruction, but when warm or cold water, the lime or metal parts especially those in the cathodes, are to be forwarded to the Superintendent, Royal Naval Hospital, Haslar.

4026.—Sterilization of Water.

(M.D. 7644/17.—11/11/1917.)

Arrangements have been made for the supply of tablets of halazone for the sterilization of water. Detailed instructions are being issued to Medical Officers of Stations, Heavy Howitzer Batteries, &c. These tablets should be kept in a cool dry place, and issued by Medical Officers. Two tablets should be added when considered necessary to each water bottle, and dissolved by shaking. After the lapse of an hour the water will be fit for drinking. Demands should be made to the Medical Department. Each of the tablets is approximately one month old, except for those serving abroad, where a three months supply should be demanded.

4140.—Department of the Medical Director-General of the Navy

(H.C. 11.—)

The Department of the Medical Director-General of the Navy has moved from the Admiralty Building to No. 12, Charles Street, Berkeley Square, London, W.1, and all correspondence, &c., [illegible] Department should be forwarded to that address.

The Inspection Lounge Nos. and Medical 281 and 282.

Notices.

The Editors invite Medical Officers to send in Original Papers on professional subjects, travel personal experiences, &c. Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations

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SYPHILIS

GALYL

Framboesia
Sleeping Sickness

[illegible]

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FORMULA [illegible]

Non toxic [illegible]

[illegible] **MALARIA**

Catarrh Coryza NEURALGIA INFLUENZA &c

[illegible]
The Anglo [illegible]

Rational Treatment of Constipation.

OPOLAXYL

Opolaxyl is [illegible] test [illegible] with vegetable [illegible] correspond to Nature's [illegible]

DOSE — [illegible] *month*

No. 2 April, 1918 Vol. IV

Journal

of the

Royal Naval Medical Service

EDITED BY

FLEET SURGEON R. C. MUNDAY, R.N.

AND

FLEET SURGEON W. L. MARTIN, F.R.C.S.I., R.N.

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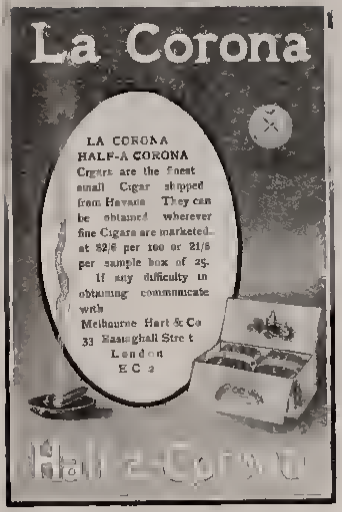

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F. [illegible] set up be [illegible] are [illegible] when a patient [illegible] down [illegible] any [illegible] [illegible] [illegible]

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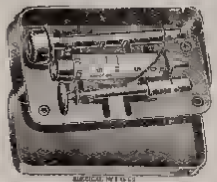

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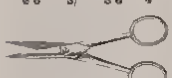

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Volume IV April 1918 No. 2

Journal
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Royal Naval Medical Service.

Original Articles.

ACTIVE SERVICE FLYING: THE MEDICAL POINT OF VIEW.

By Staff Surgeon SHELDON F. DUDLEY, M.B., B.S., R.N.
Late S.M.O. R.N.A.S. Dunkirque.

(Received for publication January 12, 1917.)

The following remarks are impressions of a few problems which present themselves to the medical officer whose duties bring him in contact with the flying men who are actually employed over the enemy lines. It should be understood that our knowledge of flying ailments is still in its infancy; hence some views in this paper may require modification in the future.

Flying Nerve.

It is necessary to recognize a factor of prime importance, namely that there exists a very large wastage of pilots (for obvious reasons the exact figures cannot be given). The chief causes of wastage are not accidents or casualties, but invaliding due to loss of "flying nerve" (a comprehensive if rather unscientific term). The fighting aviators are of little use (except in a few cases with great control over themselves) unless they are absolutely nerveless, and have their hearts in their work. That is to say, in the language of flying, they must be "full out." The average pilot being maimed or killed are, if anything, less than those of the average lieutenant in the infantry; but the nervous system of the infantry officer can stand the strain longer because he performs his duties on the ground and in a crowd. When a pilot begins to lose confidence in himself or his machine, and to calculate his chances, it is time he had a rest. Consider the pilot's duties. He has to control in the three dimensional space, and also on its vertical and horizontal axes, a most powerfully engined but extremely lightly built machine. He has to land after his

[illegible]

[illegible]

[illegible]

[illegible] is [illegible] the [illegible] plot [illegible] of seaplane [illegible]

[illegible] to pain affects [illegible] far and [illegible] or three miles [illegible] and. This [illegible] is still [illegible] the [illegible] they first [illegible] and [illegible] (i.e. in comparison [illegible] machines) [illegible] flights [illegible] machines. [illegible] but [illegible] the pilot [illegible] flying [illegible] flights [illegible] than in bad [illegible] pilots is accel[illegible] that the [illegible] than ever and [illegible] still more difficult.

On the other hand [illegible] from flying [illegible] observers are rest[illegible] up again to the [illegible] flying officer. [illegible] of flying [illegible] work [illegible] pilots possible [illegible] operations. Thus [illegible] who reports [illegible] showing signs of [illegible] should be rested [illegible] popular.

Other things [illegible] last as well in [illegible] that is frequently [illegible] in quieter quarters [illegible] nights.

[illegible] that [illegible] nervous [illegible] the time it takes [illegible] and [illegible] dependent [illegible] —

(1) The [illegible] and [illegible]

(2) The [illegible] employed on

(3) The [illegible]

(4) The [illegible] business.

The [illegible] all [illegible] The [illegible] are [illegible] opinions [illegible] the [illegible] opinions [illegible] difficult [illegible] rational [illegible] observers but [illegible] pilots and [illegible] to a greater extent than

[illegible] but necessary [illegible] Commander and Medical [illegible] [illegible] will [illegible]

I [illegible] do my provincial [illegible] mother would not be so [illegible] which is the basis of [illegible]

[illegible] right and wrong time [illegible] of further writing

Flying Officer — A Squadron [illegible] himself one of the finest [illegible] R.N.A.S. [illegible] of his best pilots who [illegible] found the officer quite [illegible] nervy, and a physical examination [illegible] the matter with him. In [illegible] of convalescence [illegible] best interest in flying and after returning [illegible] from headaches, depression and [illegible] given a month's unemployed time. When [illegible] time to duty he had [illegible] over the enemy lines [illegible]

Flying Officer — A [illegible] fly comfortably at [illegible] high flying was not [illegible] new wall [illegible] down completely and [illegible] use of the rest time was to be found in [illegible] period before [illegible] change of work so that [illegible] relief was in fact a [illegible] section which had already lost its [illegible] from tremor cardiac [illegible] pilot was towards the end, [illegible] all night in the dugouts for fear [illegible] examination of his long flying record [illegible] In spite of treatment and a [illegible]

[illegible] the most advanced forms [illegible] seen on active service. There [illegible] immediate to them

[illegible] special or ordinary leave to [illegible] to be considered. This is [illegible] further cynical question I was once [illegible] to club pilots many of whom [illegible] only loaf round hotels and [illegible] more harm than good?

[illegible] first hit [illegible] and gives the [illegible] [illegible] Colonel [illegible] Bath. On [illegible] been [illegible] for [illegible] knew [illegible] England [illegible] suggest [illegible] drawback [illegible] it, would [illegible] signified [illegible] arrangement [illegible] shall [illegible] when the [illegible] it would be a great additional [illegible] The place [illegible] of flying convalescent home or [illegible] government institution [illegible] it would be [illegible] object as few men would voluntarily [illegible] it would simply be a country club for fighting aviators who would [illegible] pay their own way. It is certain a place of this sort would [illegible] and do [illegible] towards keeping airmen most of whom are [illegible] physically and mentally [illegible]

Oxygen

The experiments carried out on behalf of the Royal Brand Medical Research Committee have conclusively proved the great value to be derived from the use of oxygen at high altitudes. Unfortunately a number of pilots in the R.N.A.S. seem to have an unreasonable prejudice against using oxygen. I think some persons without any knowledge publishing them to be so must have scoffed at it as unpractical. A false idea of the value of oxygen thus got a start and spread rapidly. However a little patience and a fair trial ought soon to eradicate this false impression. It is true that the majority of pilots flying up to 20,000 ft. do not seem to experience any real inconvenience or complaint of symptoms which suggest an insufficiency of oxygen. Those airmen who have used oxygen intelligently admit its advantages, especially in preventing tingling and irritability after returning from a flight, but they complain that the present form of apparatus impedes quick movement. This is especially the case with observers who have to perform much more extensive movements than pilots. The advantages gained by the use of oxygen markedly in preventing drowsiness and loss of quick judgment and in lessening reflex action time at high altitudes must far outweigh any small disadvantages. The Medical Officer should therefore patiently explain in the mess or to the individual the reasons why oxygen is a great help to the flying man and point out that it is the duty of the fighting aviator himself to modify the apparatus till it no longer inconveniences him. A practical apparatus should easily be arranged for the pilot, for the observer it is perhaps not quite so important. The administration of oxygen on the ground after landing from an arduous flight is useful in eliminating the products of fatigue and has no disadvantages.

[illegible] *From the Medical Point of* [illegible]

[illegible]

[illegible] are still of the opinion that [illegible] compensating for a lack of [illegible] clothing are well worth [illegible] I know of [illegible] satisfactory forms of [illegible] at present in existence. The doctor should impress on [illegible] young pilots especially the necessity for [illegible] precautions against cold and frost bite. Frost bites should never occur if proper [illegible] and the whole oil provided are always used. On [illegible] in wireless [illegible] graphic machines are prone to get frost bitten fingers if they have [illegible] their gloves to manipulate their instruments.

Some [illegible] are prone to be attributed to cold or a lack of oxygen may be [illegible] In the low temperatures of high altitude [illegible] oxygen [illegible] up the body temperature this excess of oxygen [illegible] containing less than the human body is used to [illegible] if oxygen is supplied artificially in addition to its beneficial effects [illegible] will help towards maintaining the body heat [illegible]

Alcohol, Tobacco and Exercise

[illegible] the nature of his work should keep in training [illegible] In regard to the abuse of alcohol little advice is [illegible] have no care on the whole a most temperate [illegible] service. This is not the case with tobacco [illegible] too much. The doctor therefore should [illegible] excessive smoking by explaining the deleterious [illegible] particularly on the heart and eyesight. It should be [illegible] tobacco poisoning may be present with [illegible] if them. Chewing gum or popping with [illegible] young commissioned officers is harmless and deserves every encouragement [illegible] for tobacco.

As to [illegible]—Physical training is a class rather lazy on the ground few will [illegible] if it is available. Some who are always personally [illegible] a certain amount of exercise in pottering about the [illegible] Many have been enough on games but games are the few [illegible] service. I am not sure if the introduction [illegible] physical exercises is advisable certainly not in during [illegible] Great care would have to be taken in introducing drills [illegible] content and annoyance which might result would do more harm than good. It is a fact that exercise unless the heart is in it, is of little benefit. More facilities for and a good organization of games would be the best [illegible] of keeping the men fit.

A [illegible] might be attached to each squadron to rub men down after [illegible] from a long, and arduous flight. This may seem to be a rather [illegible] idea but is worth a second thought when one considers how

[illegible] to profession [illegible] [illegible] and [illegible]

Crashes

[illegible] accidents are [illegible] treated like any other [illegible] [illegible] worth noting. Most crashes this side of the [illegible] [illegible] hospital. One's chief object should be [illegible] [illegible] into hospital as soon as possible and [illegible] [illegible] will be done on the spot. It is [illegible] [illegible] complicated splints and dressings [illegible] [illegible] though it all again at the hands of the hospital [illegible] give an injection of morphia in [illegible] [illegible] is very marked in these cases and [illegible] [illegible] morphine drive that follows [illegible] [illegible] the practice of awaiting the [illegible] [illegible] with the injured man is as [illegible] much harmful and harm may [illegible] [illegible] to hospital. Still in [illegible] [illegible] give morphia [illegible]

[illegible] is likely to sustain injuries [illegible] [illegible] at the hands. The frequency [illegible] against the gun [illegible]

[illegible] of the neck and spine [illegible] not equipped till [illegible] after the accident the pilot belonging to all appearance [illegible] it. The symptoms usually passes off within a few days but it seems [illegible] analogous to so called railway spine. A pilot is [illegible] [illegible] crashes in the air he may maintain he is feeling quite well [illegible] the accident but [illegible] suffer a severe reaction later. The medical officer should always try and find out if there was any [illegible] in the crash viz. symptoms suggesting oxygen insufficiency [illegible] to cold defects of [illegible] (see below) loss of consciousness in the air. (N.B.—No man subject to attacks of syncope should [illegible] be permitted to fly.)

There is another by no means unimportant point about accidents [illegible] Pilots and observers on the ground should be prevented from rushing out to the scene of disaster. A really bad crash with the pilot badly smashed up or dead is a ghastly enough sight for any man and does not [illegible] do any good to other flying men more especially when the victim happens to be a messmate. The Squadron Commander should be [illegible] to give orders to this effect. Any non-flying officer

[illegible]

[illegible]

Wounds

[illegible] more opportunities of keeping themselves and their clothes clean than most other combatants; therefore they are less badly infected than most war wounds. The wounded airman is generally able to get prompter energetic treatment than the wounded infantry man. For these reasons the wounds generally do very well. As against this a wounded airman may have to carry on fighting or bring his machine a long way back after he has been hit, thus increasing any hæmorrhage and exhaustion he may be suffering from.

A pilot in the event of himself or his observer being wounded when flying over country he knows should be instructed to descend at the nearest place where he can get medical attention, instead of returning to his own aerodrome which may be many miles away. I can remember instances where this procedure may have saved a life, and vice versâ in case where a life may have been lost from severe hæmorrhage through its not having been carried out. It might be advisable to place first aid dressings and a tourniquet in every aeroplane, because, though it is scarcely practicable to use them in the air except in a very big machine like a Handley Page, the dressings would prove useful on landing anywhere away from immediate help.

The Pilot's Vision

In this Journal for July, 1917, Surgeon H. G. Anderson pointed out the importance of the special senses to airmen. With regard to eyesight recent research has shown that aviation tends to bring out any muscular inefficiency of the visual apparatus which in airmen becomes a kind of [illegible] neurosis. Owing to latent or periodic strabismus the subject at times (especially after much eye-strain) only uses one eye, a possible cause of bad landings owing to misjudging distance; or he may get temporary loss of or blurring of vision which may be disastrous to him at any time. I confess I have never recognized a case of this kind but that may be due to lack of experience in eye work. It is, however, a condition one should look out for. All flying men should be impressed with the importance of using suitable goggles and in summer or when the snow is on the ground tinted glass in the goggles would save a good deal of

[illegible]

[illegible]

Malaria

Malaria is a [illegible] River [illegible] of chill and fatigue are ideal for [illegible] which occasionally [illegible] unsuitable for aviation. Malaria [illegible] R.N.A.S. pilots especially those who have [illegible] Africa. As an example the following case is [illegible] severe rigors is [illegible] some time his mental condition is [illegible] necessitated his being sent to the I.N. Hospital [illegible] with recurrent malaria should not be allowed to fly [illegible] from recurrences for six months otherwise he may [illegible] after this time and run the risk of developing some form [illegible]

The Medical Officer's Relation to Aviation

The Medical Officer can look after two or three [illegible] occupied by one or two squadrons. There is not enough work [illegible] doctor to each aerodrome and one is not needed as in [illegible] mentioned above [illegible] of no more use than a good sick berth [illegible] the case is in hospital. The ordinary sick list is usually extremely small and sanitary duties take very little time. Therefore the doctor has plenty of time to cultivate the acquaintance of the human units [illegible] responsible for, and thus be best able to notice the earliest signs [illegible] breakdown or of minor maladies in the flying officers in the [illegible] to. As a help to keeping minor fit lectures should be given on the [illegible] medical they ought to know. Better work can be done in this [illegible] however, by talks and arguments in the mess or with individuals on medical subjects connected with flying. Besides this [illegible] is also most instructive to the doctor himself as to the medical [illegible] of flying officers.

[illegible] and reference [illegible] close at hand

[illegible] there is enough [illegible] in the medical side of aviation [illegible] forces in having a special medical service of their own [illegible] men permanently attached to the air services and [illegible] due to flying [illegible] knowledge of air ailments, and [illegible] preventing and curing them will progress with greater [illegible] possible. It may seem that in places this paper [illegible] individual aviator at the expense of getting on [illegible] the side of argument suppose on sifting all the [illegible] circumstances of a speedy victory were enhanced by [illegible] of their wished themselves or became nervous wrecks [illegible] of the medical officer to say anything [illegible] I believe all the available evidence goes to show, [illegible] care of the pilot's health and giving him [illegible] more flying hours of better quality [illegible] better in supremacy over the enemy will [illegible]

[illegible] remembered the air forces are increasing at [illegible] the demand for pilots becomes greater, therefore [illegible] men to do all they can to lengthen [illegible] of the fighting aviator

ANTITYPHOID INOCULATIONS, ANTI-ENTERIC [illegible] DURING THE THREE YEARS OF THE WAR

By [illegible] A. Sc. [illegible] Major [illegible]

The period covered by this [illegible] has been one of [illegible] during which time [illegible] Home and the Western Expeditionary Force [illegible] The typhoid vaccine has been [illegible] and no [illegible] has been made in the strength of the [illegible] greater part of the vaccine has been prepared at Greenwich [illegible] 1900 bottles have been filled and supplied to the various depots. The largest demands for the vaccine have come from the Royal Marine [illegible] Royal Naval Barracks at Chatham and Portsmouth, the Royal Naval Depot at the Crystal Palace, and the Royal Naval Air Stations. [illegible] show that comparatively few reactions have given rise to any disablement or have necessitated hospital treatment, even when the typhoid vaccine has been combined with cholera vaccine at the same time as the [illegible] necessary in cases going to Russia these have caused very little [illegible] This has been the experience throughout, and has done much to popularize the inoculations which are looked upon as necessary measures to safeguard the health of those going into infected areas. It is however most important to advise individuals to rest for at least twenty-four hours and moderation in all things for a few days. The most common result noticed is a feeling of stiffness for two or three days, with some local soreness at the site of the inoculation.

ABSTRACT OF RETURNS [illegible] ENTERIC [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

In this period the total number of enteric was 111, consisting of ninety-three typhoid, twenty-one paratyphoid A, and thirty paratyphoid B cases. There were also seven other cases in which no definite diagnosis was made, the symptoms in two of them pointing to malaria. These cases have not been included.

TYPHOID

[illegible]	Inoculated		Not inoculated	
[illegible]	[illegible]	Total	[illegible]	[illegible]
[illegible]	13	[illegible]	6	3

(Not included)

DISTRIBUTION FOR [illegible]

	Total	[illegible]	Typhoid	[illegible]	[illegible]
[illegible] Home Fleet	96	1	1	—	1
[illegible] Dardanelles	3	—	2	—	1
[illegible]	17		10		
[illegible]		—		5	
[illegible]	5	—			1
[illegible]	1		—		1
[illegible]	9			1	5
[illegible]	11	1	13	5	

The greater [illegible] of these [illegible] and the Melbourne among [illegible] many of these [illegible]

[illegible]

The protection afforded appears to be greatly [illegible] period of twelve months and inoculations should certainly be [illegible] the end of eighteen months.

PARATYPHOID A

[illegible]

DISTRIBUTION FOR PLACE

	[illegible]	[illegible]	[illegible]	[illegible]
Melbourne	[illegible]	1	7	1
Melbourne	[illegible]	2	2	[illegible]
Total		3	9	1

In [illegible] appears to have given little protection [illegible] but at the only death was that of [illegible] Of the twelve [illegible] cases that contracted the disease [illegible] only three contracted the disease [illegible] twelve months and in three the time was [illegible]

PARATYPHOID B

[illegible]

[illegible] the protective power of the [illegible] Paratyphoid A but it was not to definite [illegible]

DISTRIBUTION [illegible]

[illegible]

[illegible] that two were inoculated twice [illegible] only [illegible] contracted the disease [illegible] two

[illegible] years [illegible] recorded.

[illegible] was yet [illegible] previously [illegible] with the [illegible] which [illegible] the present period and [illegible] who had [illegible] inoculated. The [illegible] deaths in [illegible] oculated [illegible]. The results [illegible] inoculations [illegible] satisfactory [illegible] both [illegible] influence and a low mortality. The protection [illegible] very considerable.

PHLEBOTOMUS FEVER IN LEMNOS

By Temporary Surgeon J. [illegible] M.A., M.D., D.P.H.

Phlebotomus fever, although [illegible] is a clinical entity [illegible] name of "three day fever" for [illegible] past in Malta [illegible] districts in India has only become [illegible] interest [illegible] Dean in 1908 in Herzegovina points to its relationship with the [illegible] phlebotomus flies and thus recalls the fact that the [illegible] collection of pyrexias of uncertain origin. Since that date [illegible] amount of research work has been done in regard to the [illegible] phlebotomus and the clinical and bacteriological aspects of the [illegible] even at present in view of the close analogy between this [illegible] fever and the "six" and "seven day" fever there still remains [illegible] research for clinician and bacteriologist. The existence of phlebotomus fever along the littoral of the Eastern Mediterranean and the [illegible] islands is now definitely established and this paper [illegible] especially the clinical aspects and in a less degree the epidemiological features of the disease as seen in an epidemic form in the island of Lemnos. It has certainly been present here for the last three years. [illegible] the recognition of this fever was not very complete owing to confusion with many other pyrexial conditions then very prevalent, but accounts of the disease in epidemic form at that time on the Gallipoli Peninsula have been published by Armand-Delille [1] and Sarrailh [2]. In 1916 a very definite epidemic was noticeable at Mudros. Last [illegible] when the clinical description has yet been published. In this paper an account is given of the epidemic of 1917 in so far as is possible in the circumstances under which it was observed. From May 17 to August 20 H.M.H.S. [illegible] was moored as a base hospital ship in Mudros Harbour and for the greater part of this period received all patients both from the Army and the Naval and Marine establishment ashore; naturally, also, all the patients with phlebotomus fever were drawn from the same source. Up to the end of May a certain number were treated either on H.M.S. Europa, acting as the depot flagship, or at a few points in hospital shore. After that date, during June, July and August, all cases were on board H.M.H.S. Rewa, and it is on this group of cases that the notes in these pages are based.

EPIDEMIOLOGY.

The main features in the spread of the disease may be briefly summarized. The disease is contracted through the bite of one of the [illegible] of the phlebotomus or sand-fly family. A single bite will suffice to infect, but as a rule, many bites are present. The virus is taken up by the female sand-fly only from patients suffering with the fever. A fly is

[illegible] present known the blood is not [illegible] in the [illegible] the disease and not later After a period of six to eight [illegible] the [illegible] capable of transmitting the virus—this there is a develop[illegible] within the body of the insect concerning which nothing [illegible] present

The virus can be filtered through a Chamberland candle [illegible] and [illegible] an injection will set up an attack of the disease As to the nature of the virus whether bacterial or protozoal [illegible] definite evidence [illegible] produced though Rogers [3] and Stanker [illegible] have each described [illegible] bacterium as being present in a small percentage of cases [illegible] fever The origin and the nature of the infecting agent [illegible] unknown at present but from Dutton's observations it is possible that the virus may be carried over from season to season through [illegible] which form the first adult generation of the new season

It has been definitely established that several members [illegible] phlebotomus family may transmit the disease for [illegible] various species Patton and Cragg [illegible] Medical [illegible] be consulted In Lemnos the disease is prevalent from May to [illegible] the majority of the cases occurring during June July and August [illegible] the weather is hottest and the number of sandflies [illegible] As far as it was possible to establish the common [illegible] was *Phlebotomus papatasi* this species [illegible] in series of small hops very like the jumping [illegible] numerous on the warm close nights and may be [illegible] under any artificial light They [illegible] pass through the ordinary mosquito netting

With regard to their breeding places the [illegible] the native houses one of such [illegible] stones is present in the [illegible] the Naval and Military camps is [illegible] artificial stone embankment [illegible] the water's edge The camps [illegible] with stray gullies affording [illegible] stages of the sandfly The camps should [illegible] on the [illegible] headquarters [illegible] NO camp close to the foreshore and the Military [illegible] the water of the harbour and East Mudros [illegible] and passing [illegible] the Naval [illegible] temporary drain partially dry during [illegible] of stagnant water in places—[illegible] houses near to the [illegible] probably from the local breeding [illegible]

Outlying still Marine camps on the [illegible] NAS [illegible] provided with [illegible] cases—one six only [illegible]

[illegible] camp [illegible] 8 [illegible] camp [illegible] [illegible] number [illegible] the [illegible] [illegible] number [illegible] two patients [illegible] opposite [illegible] harbour [illegible] three miles [illegible] West Mudros [illegible] camps [illegible] susceptible [illegible] most of the [illegible] October 19th, and were very trying while at the Naval [illegible] boys under training, at intervals [illegible] from [illegible] as a [illegible] in their passage on [illegible] and ship's crews who have left their ships and [illegible] cases developed among such [illegible]

[illegible] crew whose ship had been torpedoed was sent to this [illegible] in six days a considerable percentage was down with sand-fly [illegible] In contrast with this no cases were sent to the Rewa from [illegible] required for musketry work at the rifle range although a considerable number of men were trained there this camp was well away from Mudros and from any native houses and was situated a quarter of a mile from the beach

The unsoiled nature of the Marines was probably responsible for the heavy incidence of the disease among them—in this series of 287 cases 110 were from the Marine camp at East Mudros but other cases occurred also, and probably about 50 per cent of the troops in this camp fell victims to sand-fly fever A reasonable degree of immunity is said to follow the disease so that should this battalion be here next year, the incidence will probably be considerably lowered The problem of immunity is discussed in a later paragraph in this paper The men in ships in the harbour may be said to have remained free from the disease several cases were actually received from ships but in all cases the men had only joined within a period of a few days and had previously been stationed in the camp or they had been ashore and been definitely bitten there by sand-flies It is interesting that in one ship at least, lying within about half a mile of Mudros sand-flies were occasionally caught on board, having been blown off from land so that the development of sporadic cases on board is quite possible

No information was obtainable as to the liability of the native Greek population to the disease nor was any investigation made as to the prevalence or otherwise of the disease in the inland villages

Climate

Meteorological records were not kept on shore at the Mudros camps but a relative comparison was obtained from the entries in the log of the Rewa

During the summer months from May to August, the weather is very settled occasionally moderate to fresh breezes (No 4 to No 5 on the Beaufort scale) blow generally from North to North east, for periods of

[illegible]

As the [illegible] period [illegible] developed [illegible] days [illegible] calm [illegible] was [illegible] table shown [illegible] Kewa for the [illegible] thirty-five and thirty [illegible] following table the [illegible] days earlier was [illegible]

TABLE I

Date	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	—	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	—	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	—	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	—	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	

TABLE II

Date	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	

In Table II there [illegible] number [illegible] strong breezes prevail [illegible] of the [illegible] The average daily adm[illegible] Table [illegible] Examination of the ship's [illegible] to August 20) on thirty-six [illegible] prevailed on [illegible] cattle freezes while on [illegible] there a moderate or fresh [illegible] (No. [illegible] to No. [illegible] Beaufort). These records are for the evening at 8 p.m.

only probably had there been shore records to [illegible] this would have been seen to be even more favourable to the activity of the sand fly.

The *average daily temperature* at noon and the *average maximum daily temperature* (generally at 4 p.m.) for the three months is shown in Table III.

TABLE III

	Average daily noon temperature	Average maximum daily temperature
June	75·9° F	79° F
July	81·8° F	83·6° F
August	82·7° F	85·3° F

These records were taken by means of a thermometer in the chart room of the Drewa; hence they do not give real shade records, and are only of relative value. There is practically no rainfall in Lemnos during the summer months.

GENERAL REMARKS

Almost 200 cases of phlebotomus fever were admitted to the Drewa during three months' stay at Mudros. Excluding those in which dysentery and other diseases were simultaneously present with the fever, and cases in which subsequent examination revealed incomplete notes or doubt as to diagnosis, a series of 237 cases was eventually obtained for recording purposes.

The *age distribution* was as follows:—

TABLE IV

Age	Number of cases	Per cent
20 and under	104	44
30	85	36
40	31	13
50	17	7
Total	237	100

The *weekly admissions* from June 1 to August 24 are given in Table V.

TABLE V

	Number of cases admitted
Week ending June 9	11
16	24
23	29
30	35
July 7	34
14	9
21	16
28	11
August 4	13
11	33
18	19
23 (5 days)	13
Total	237

CLINICAL CHART

[illegible] *ation* [illegible] is stated by Birt [illegible] to be from four to seven [illegible] by Graham [illegible] two to four days

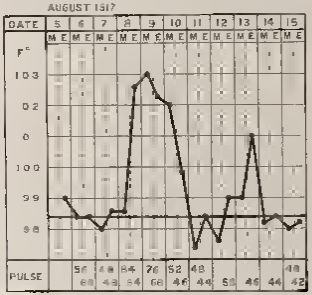
[illegible] In this series of cases as it was possible to give any definite [illegible] the incubation period it appeared to lie within six days in several [illegible] it was distinctly shorter

One [illegible] (No. 221) was ashore on August 15, and was badly bitten by sand-flies. He developed symptoms on the following evening and was admitted on August 17 with typical symptoms and physical signs. Another (No. [illegible]) was definitely bitten on August 18, and the onset was on August 21. One patient (for the details of whose case I am indebted to Staff Surgeon J. MacCutcheon R.N.) was ashore on August 1 at the Naval Camp where he was bitten severely by sand-flies. On August 5 he was sent aboard the "Rewa" with marked oedema of the dorsum of the hands, wrists and feet secondary to the bites. He then had a temperature of 99° F. and felt weak. This subsided on the following day, and the temperature was normal, but on August 8 in the evening he developed sudden headache and the typical eye congestion, with a rise of temperature to 102·6° F. Lumbar pain was present, with a temperature of 103° F. on the 9th. In this case he was actually under observation from twelve hours after being bitten, the incubation period may definitely be fixed at three days. A chart of this patient (*vide* Chart 1) is given as of special interest, as apart from the incubation period being shown, it is very typical in regard to temperature duration, and bradycardia, and it also shows a very definite recrudescence of temperature on the fifth and sixth days with no recurrence of symptoms.

Prodromal symptoms, apart from slight malaise and very infrequently a dull frontal headache, are rare.

The onset of the disease is remarkably abrupt. In many instances there is a marked resemblance to the dramatic suddenness with which acute influenza strikes: the patient generally volunteers the statement that, at a definite time, the first symptoms were noted. In a considerable number of cases the patient wakes up in the morning with the acute symptoms already present. A definite rigor is rare, but it was present in two out of the present series. More usually there is a feeling of chilliness only, or alternate flushings and cold sensations are felt. Slight dizziness or vertigo is often present. Supra-orbital headache rapidly supervenes, and in a few hours the pain is frequently referred to the back of the orbit. This pain is increased on any movement, especially of the eyes, and vertigo is present if the eyes be moved rapidly. The eyeballs become sensitive to slight pressure. Photophobia is rarely present, but the patient dislikes a bright light. Muscular force is rapidly lost, and the limbs, especially the legs, feel very weak. In several cases this "giving way" of the legs was the initial reason for the patient reporting himself. Asthenia is rapidly followed by pain referred generally to the muscles, especially of the thighs and calf,

[illegible] but examination [illegible] tendinous attachments of the [illegible] near the [illegible] Stiffness and pain [illegible] back of [illegible] the lumbar region of the spine is almost [illegible] tenderness is present, but not the acute [illegible] the rigidity of the lumbar spine. By some [illegible] bones of the limb [illegible] satisfy [illegible] of [illegible]



[illegible] prodromal period [illegible] attack, recrudescence and [illegible]

More rarely pain is referred to the epigastrium (in ten per cent of cases) in some, but not all of these cases the pain is undoubtedly muscular; in a few instances definite girdle pains were complained of.

Vomiting, either at the onset or later on, was met with in twelve per cent of this series of cases. Epistaxis not infrequently recurrent in six per cent. Slight sore throat at the onset was complained of in ten per cent.

The face and neck rapidly became congested—sometimes circumoral pallor is very noticeable. The patient soon becomes drowsy, and tends to resent being disturbed. Cerebral symptoms, apart from dullness, are rarely present; in one patient only was there slight delirium at night. The temperature rises rapidly to 103° F., more or less, sometimes as high as 104° F. or 105° F., the highest temperature in this series reached 106·6° F. on the day following the onset. Pulse rate rises also, but not in proportion to the temperature rise, e.g., in the case just referred to there was a pulse rate

[illegible] of the [illegible] conjunctiva [illegible] her patients [illegible] [illegible]

The [illegible] congestion [illegible] very frequently this congestion is seen to be [illegible] lateral band extending from either canthus to the cornea [illegible] portion of the eye exposed between the upper and lower lids. In [illegible] however the conjunctival vessels may be seen to be congested [illegible] over the ocular conjunctiva but even over the palpebral [illegible] This suffusion of the conjunctiva is always present in small [illegible] and its absence is a diagnosis of phlebotomus fever is doubtful. It is [illegible] not diagnostic, it is common in the acute malarial attacks [illegible] influenza and other diseases of febrile nature. So common is it [illegible] that the disease has been given the name of "pink eye" [illegible] is [illegible] phlyctenulosis lachrymation and discharge.

Herpes labialis [illegible] malaria apart from the initial congestion [illegible] is not present. The tongue is usually [illegible] white and brown fur at first, this increases rapidly on the [illegible] and disappears rapidly with the fall of temperature leaving [illegible] the tip and the edge of margins intensely red throughout. The [illegible] is [illegible] the same [illegible]

The palate [illegible] cases showed [illegible] congestion—all soft palate [illegible] and [illegible] separated [illegible] in 10 per cent of cases [illegible] delirium erythematous with small [illegible] present on the soft palate. Castellani [illegible] the [illegible] rising of small lenticular rounded spots [illegible] palate and persisting after the temperature has dropped.

In [illegible] of congestion of the fauces were present.

The glands of the neck were not appreciably enlarged in tender in any case.

The bowels as a rule are constipated; in two cases the onset of the disease was accompanied by temporary diarrhœa not of a dysenteric type. Anorexia and loss of appetite are very usual. Rashes apart from simple erythema of the chest or abdomen and miliaria (sweat rash) were not seen in one case only was there any dengue like rash—although very well marked in this case it was present on the third day and was unaccompanied by any rise of temperature or recurrent pains and was probably due to bugs. Sweating is usual after the first twelve hours.

Nasal or nasopharyngeal catarrh was present in five cases and a slight degree of bronchial catarrh in two. Tonsilitis developed during the disease in two cases; a slight attack of pleurisy very localized and rapidly clearing up in one case, while one patient developed bronchopneumonia after the temperature had been normal two days.

A catarrhal appendicitis occurred in one patient with a rise of temperature.

ture to 100 8 on the fourth day of the illness but all symptoms [illegible] appeared on the seventh day Dysentery developed in some ten cases from the second to the ninth day of the illness in a number of other cases not included in this series the two infections were concurrent The circulatory system shows very little alteration, in 5 per cent of cases a marked hæmic bruit was present during the fever, disappearing as the temperature fell Bradycardia is very common as the temperature drops and during convalescence

In 6 per cent of cases the spleen was either just palpable or was enlarged to percussion this enlargement was of short duration only, and the spleen became normal with the fall of temperature No urinary changes were found

Blood counts showed the usual leucopenia, with increase of mononuclear elements the following is a characteristic example —

Case No 101 (July 3—9) —

Day of disease	White blood cells	Neutrophils	Large lymphocytes	Small lymphocytes	Hyalines	Eosinophils
1	5 300	—	—	—	—	
2 (T normal)	4 400	12	24	30	1	—
4	4 650	34	21	40	4	1
6	6,900	57	8	32	2	1

The Parenial Period of Phlebotomus Fever

The acute onset is associated with a rapid rise of temperature which usually reaches a maximum on the second day of the disease in most cases this is reached in thirty six hours There is thus a plateau of high temperature on the first and second days not infrequently extending into the third day, then a more or less rapid drop to normal on the third or fourth day The initial rise is always abrupt but the fall of temperature shows several variations These may be classified under the following types

(a) A fall to normal by a direct line or curve

(b) An indirect fall by steps or lysis, to normal

(c) (1) A fall direct or indirect with definite recrudescence of temperature before reaching normal (2) a fall direct or indirect with recrudescence after the temperature has reached normal

The relative frequency with which these types of fall occurred is shown in Table VI

Table VI

Type of fall	Percentage of cases
A	34
B	31
C 1	10
C 2	22

The fall of temperature is in all cases accompanied by a rapid cessation of all symptoms, so that the patient feels almost well again from the third

day onwards. The eye congestion rapidly disappears, the tongue becomes clean, and the patient is frequently anxious to get up before his temperature is actually normal.

The synonym of "three day" fever is somewhat misleading, as the duration of the pyrexial period varies from two to as much as [illegible] nine days. A comparative table of the duration of pyrexia in cases from Malta, from Nashera (India) and from the present series is given below:—

TABLE VII

	Number of cases	Duration in days pyrexial							
		2	3	4	5	6	7	8	
Malta (Birt)	211	20	30	93	13	1		[illegible]	[illegible]
Nashera (Wymbarley)	160	—	22	37	24	9	[illegible]	[illegible]	[illegible]
Present series	237	1	14	29	31	12	[illegible]	[illegible]	[illegible]

In calculating out the duration of the disease in this series [illegible] day on which the onset occurred is counted as one day. [illegible] cases the disease was then only a few hours old, the duration [illegible] is probably rather more prolonged than if exact twenty four hour periods had been taken from the time of onset.

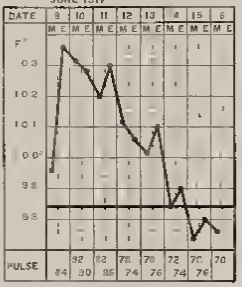


CHART 2.—Pyrexial period of nine days.

An example of a pyrexial period of nine days duration is given in Chart 2. The maximum temperature was reached in 21 per cent. of cases on the first day, 63 per cent. on the second day, 11 per cent. on third day, 2 per cent. on the fourth day. The maximum pulse rate closely corresponded, viz. 21 per cent. on the first day, 61 per cent. on second day, 15 per cent. on

[illegible] per cent [illegible]. The [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1	[illegible]	1
[illegible]	1	[illegible]	[illegible]
[illegible]	[illegible]	24	[illegible]
[illegible]	[illegible]	10.8	[illegible]
[illegible]	[illegible]	2.6	[illegible]
[illegible]	2	7.9	[illegible]

[illegible] was [illegible] than [illegible] cally [illegible]

[illegible]

[illegible] art will [illegible] eturn to [illegible] common, [illegible] show [illegible] In this series of cases it has [illegible] preferable [illegible] perature, after the original [illegible] for twenty [illegible] ence rather than a relapse, [illegible] unaccompanied [illegible] signs or symptoms of the [illegible]. A slight [illegible] on the day following the [illegible] was [illegible] present in 11 per cent of [illegible] in 2 per cent it was [illegible] lescence extended over a [illegible] three days [illegible]. In 17 per cent of cases [illegible] single rise on [illegible] after normal was reached. The [illegible] the patient as [illegible] temperature was normal was [illegible] possible for many [illegible] rises.

[illegible] convalescence [illegible] the form of a two or three [illegible] the temperature had [illegible] normal for several days. Care [illegible] preparation of [illegible] to exclude any other disease [illegible] convalescence.

[illegible] example [illegible] with no symptoms [illegible] between some of these cases and dengue cases is extreme [illegible] admirably for specimen cases of dengue, but in no case was [illegible] of pain or rash observed; slight headache was rarely present.

Second attack.—The percentage in which a second attack may be expected is given by Birt [6] as 5 to 10 per cent; by Graham [7] 5 per cent [illegible]. Even cases of third attacks have been noted in the same epidemic, though these are rare.

According to Houston [9] "One attack does not appear to confer absolute immunity against the disease, as a second or even a third in

[illegible] consecutive years has been noted in a few cases. [illegible] percentage two attacks in one year have been noted.

In this series of 247 cases fifteen with [illegible] attacks in all, in eleven other cases a definite history [illegible] the same season was elicited [illegible] per cent. [illegible] additional 4 per cent probably had a second attack [illegible] in all about 11 per cent.

In the fifteen cases seen by myself with two [illegible] in of the pyrexia was the same in each illness in one [illegible] it was shorter and in five cases longer. The fall in [illegible] the second attack was usually more direct (Types A and [illegible] indirect (Type C).

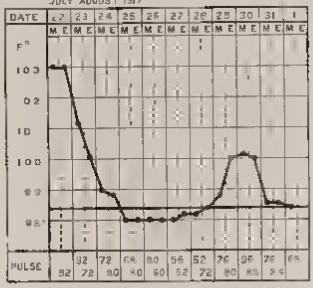


CHART 3.—Late recrudescence with no symptoms.

In [illegible] of the fifteen cases the interval between attacks was three weeks [illegible] under and in five cases it was six to eight weeks. I did not see [illegible] of three attacks in the same person but I was [illegible] that such had occurred in the previous season. Cases were also [illegible] in which an attack had occurred in 1916.

It would probably be correct to state that immunity is conferred to the extent [illegible] per cent for the same season and that second attacks may be expected in [illegible] per cent of cases.

Complications and Sequelæ

[illegible] are very rare; such as occurred in this series have already been [illegible] in the section on symptomatology. A considerable degree of prostration and weakness is described as a common sequel in some epidemics; in this present one the extraordinary rapidity of recovery generally was very noticeable, even in cases with high pyrexia and most

of the patients were quite fit for duty in seven days; in a few there was residual stiffness and weakness of the legs for a few days and one or two cases developed neurasthenic symptoms. Vertigo, on the first day on which the patient was up, was common.

Diagnosis.

The chief diseases with which phlebotomus fever is likely to be confused are malaria, dengue, influenza, sunstroke, and in some countries yellow fever. All have an acute onset with rapid rise of temperature, supra-orbital headache and lumbar pains and congestion of the eyes.

Malaria must be excluded in any case with high temperature by blood examination and an easily palpable and tender spleen; the rapid fall to normal and reaction to quinine assist in its exclusion.

Dengue occurs in more "explosive" epidemics and the final rise of temperature is associated with recurrent pains and frequently a morbilliform rash.

Influenza is uncommon in countries where sand-fly fever prevails; the catarrhal symptoms would rapidly exclude any mistake in diagnosis.

Sunstroke may be diagnosed by the very high temperature and tendency to coma; *yellow fever* by the presence of albuminuria, icteric conjunctivæ and lack of correlation between pulse and temperature.

Treatment.—The disease will run a definite course and drug treatment will have little effect upon it. Aspirin, quinine, sodium salicylate, phenacetin and a diaphoretic mixture were used on groups of these cases and had no effect, as far as could be ascertained, upon the duration of the pyrexia. Aspirin seemed to relieve the symptoms and lower the temperature more quickly than any other drug, and quinine in less degree did the same. Iced water compresses frequently applied to the head were found useful in the relief of the supra-orbital and retro-orbital pain. Aperients and a fluid diet for two to three days are necessary. The patient can safely be allowed up when the temperature reaches normal, as no cardiac weakness is left. Convalescence is usually very rapid and the patient may resume duty in a little three to four days after the temperature has fallen.

The Lesions Produced by Sand-flies.

The usual eruption produced by the bite of the sand-fly is a papular one. A definite puncture is not often seen by the unaided eye, very rarely a small hæmorrhagic spot marks the site of the bite. The papules vary very obviously in size and are usually of carmine pink to a dull red in colour. A vesicular rash with the papular variety is not uncommon. In a few cases these rashes were found with a definite erythematous areola round the raised papule or macule. Urticarial forms of the rash are not uncommon and in some patients a considerable amount of œdema is produced. Rarely in very susceptible patients considerable reaction follows the bite and a definite vesicular eruption is produced, the vesicles may be as large as 1 in. in diameter.

[illegible] of irritation [illegible] lesions are [illegible] the papule [illegible] to an [illegible] Such [illegible] secondary [illegible] usually follows. The [illegible] for [illegible] The [illegible] the parts normally exposed is [illegible] the [illegible] of the hands wrists and forearms [illegible] the lower half of the [illegible] arm, the dorsum of the feet [illegible] The face neck [illegible] abdomen are occasionally bitten [illegible] frequently. In a [illegible] cases seen in this series no lesion [illegible] there only a few papules but the majority showed many lesions [illegible] of the forearm [illegible] flexor surfaces show few bites [illegible] probably due to the [illegible] attitude of sleep being a flexed [illegible] thus [illegible] these surfaces [illegible] attack.

In a few cases there is a [illegible] residual distribution of pigmentation in the skin as a result of [illegible] primary and secondary lesions with much irritation.

I have to thank Staff Surgeon [illegible] for all details in connection with officer patients and [illegible] W. W. [illegible] R.N. S.M.O. of H.M.H.S. Rewa, for permission to [illegible] the clinical notes on all cases.

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[illegible] THESIS IS THE WAY [illegible]

[illegible] of [illegible] is and treat[illegible] those [illegible] is what [illegible] being grouped together [illegible] the [illegible] heart [illegible] neurasthenia [illegible] which is merely [illegible] importance [illegible] War [illegible]

In the [illegible] 1914 [illegible] commencement of the War the number [illegible] the [illegible] department of the Royal Naval Hospital, [illegible] increased from thirty to forty-fourfold. In the present [illegible] of [illegible] for the same period of time is merely [illegible] accounts for by the great proportion. The [illegible] rise is the War has gone on and it is only to be [illegible] increase will continue.

It [illegible] to define whatever condition is being made the subject [illegible] It is extremely difficult to define with any accuracy [illegible] neurasthenia. This difficulty I find is due to the [illegible] which the term has been used and consequently to [illegible] to which it has come to be applied.

[illegible] who has had the opportunity of observing many of the cases [illegible] it is clear that they very rarely approximate to the [illegible] of neurasthenia. The disturbance of the nervous [illegible] is shadowed by the abnormal mental state and the cases can be [illegible] in a sequence of degree to form a series which leads eventually [illegible] the border line into the region of insanity. If a group name is necessary the preferable term would be psychasthenia and not neurasthenia.

The [illegible] feature and the feature which is common to all the cases is a [illegible] from the normal mental attitude and it is [illegible] that any description which will merit the name must depend upon [illegible] of the mental rather than of the physical state. The determination of the cause and the rationale of the treatment will also depend [illegible] rather than on physical factors.

It is a fallacy to regard neurasthenia as a disease in itself. It is in reality the result of the operation, over a considerable period of time, of a [illegible] of mental mechanism.

To choose an analogy from the realm of physical medicine, a stoker [illegible] to the sick bay complaining of dyspnœa and faintness. On examination—the heart is found to be dilated, irregular in its action, and subject to regurgitation at the mitral valve. The condition is one of heart failure and is recognized to be due to the fact that the heart, in its defective state, is incapable of accommodating itself to the requirements of an individual

who has to carry out [illegible] stoker. When [illegible] properly and a state of [illegible] has been [illegible] that any attempt by the [illegible] work under such [illegible] would only result in [illegible] the heart failure [illegible] normal heart suffices [illegible] by disease [illegible] same considerations [illegible] employment of the [illegible]

Now the various dis[illegible] bear the same [illegible] the heart with failure [illegible] leakage. They are the result [illegible] the failure of the organism [illegible] placed.

In order to appreciate what [illegible] such stress of mind it is necessary [illegible] purpose and method of mental [illegible]

The mind is to be regarded as the [illegible] function of the nervous system [illegible] nervous system has for its primary [illegible] safeguarding and preserving the life of the individual and the [illegible] survival of the race in the struggle for existence. Initially a stimulus received by the surface of the organism [illegible] simple nervous connection into motor [illegible]. With the development of higher centres a further function [illegible] that of consciousness. That is to say the stimulus [illegible] its appropriate or reflex activity was recorded in consciousness as a sensation. A second stimulus would then arouse memory of the first and [illegible] rudimentary system of thought or association would be [illegible]

The essential necessities of such a simple organism for its self preservation and for the propagation of its species [illegible] embryonic mind would be totally concerned with stimuli so far as they had relation to the satisfaction of those necessities. As development proceeds and the complexity of the consciousness grows associational processes occur which have no direct bearing on the actual needs of the organism. A pleasurable sensation becomes desired because it is pleasurable and not because it indicates the well being of the organism. Still later processes develop which are entirely abstract as regards the organism and it is in these processes that the highest faculties of reason and judgment reside.

It must be borne in mind, however that with all this vast complexity of association or thought, just as in the simple organism considered above mental activity needs for its inception the perception of stimuli from the outside world and has for its result motor activity of some kind.

The establishment of the capacity for abstract thought and the growing submergence of the individual in the organized social system demanded a great modification from the original mental mechanism before the present day state of man could be reached. It is clear that whereas in the first

plac[illegible] e response t[illegible] v is [illegible] e found in the p[illegible] n su some m[illegible] pressing those instincts was [illegible] l state could not [illegible] nul, with the continual necess[illegible] n in an uncivilized [illegible] unity, abstract thought could [illegible] m

H[illegible] n the developm[illegible] t of th secondary instincts which [illegible] the hard instinct[illegible] th y include such forces as the se[illegible] n &c In their initial stages of growth they [illegible] p with the powerful primary instincts As a [illegible] ssociated with the religious factor and even at this p[illegible] seen that the necessity of helping out the moral ideas by [illegible] question of religious duty is very great The god of the [illegible] continually invoked as an aid in holding the population [illegible] preventing the overriding of the conception of duty by the [illegible] primary instincts

[illegible] and also by reason of the comparative immunity of the [illegible] conditions of civilization the primary instincts have been [illegible] to a great extent Perceptions which once would have aroused [illegible] to instant activity for self preservation have been deflected and the instinct of self-preservation is not awakened Man has become adapted through many ages to his surroundings and so his development has been enabled to proceed

To realize to what in extent that adaptation has been carried it is only necessary to consider any of the ordinary commonplaces of life Take for example the manner in which a savage would behave if he were put in a railway train and drawn along at 60 miles an hour He would be in a perfect frenzy of terror and would leap out at the first opportunity, while a civilized man can pursue a train of thought with perfect composure and without any feelings of fear

An adaptation of the mind however does not remove the primary instincts They remain deep set and their paths of communication are well handed up It is only necessary for some especially sharp stimulus to pierce the defences or for the boundary to be eaten away by some [illegible] influence such as a neuro toxin and once again they will exercise [illegible] sway over the direction of thought and mental activity

The phobias claustro, agora phobia &c, are instances where the protective mechanism has broken down and the unfortunate individual [illegible] they occur finds himself under certain circumstances, the victim [illegible] violent emotional disturbance which is totally at variance with [illegible] and which he can only control by the expenditure of intense [illegible] energy Such people are abnormal judged by modern standards [illegible] in reality only reversions to primitive type The condition is [illegible] and their behaviour under the special circumstances is simply that [illegible] unadapted uncivilized mind

[illegible] the perfect mind should be capable of adaptation to any

[illegible] in its capacity of [illegible] personal [illegible] in fact under any circumstances, provid[illegible] if the [illegible] in the way of food and rest are attended to

Unfortunately the theoretical state of perfection [illegible] the bounds of possibility, but it is a remarkable fact that [illegible] portion of the nation has succeeded in accommodating itself to [illegible] of this War

The actual psychology of the sailor at war is a matter [illegible] the scope of this article, there are many factors at work which [illegible] his mind active and satisfied while there are many which act in a [illegible] direction but the all important element is the degree of his adaptation to his surroundings, in other words how far his instinct of self preservation is protected from stimulation

Now if as been pointed out already the bouldering up of the paths leading to the primary instincts will fail in certain cases in ordinary civilian life much more then are they liable to fail under conditions of war In addition, whereas the civilian can alter his circumstances it will in order to evade the distressing perceptions there is no possibility of such a course being open to the sailor at sea to day

His adaptation or protective mechanism having gone he is obliged to use up his store of mental energy in repelling the forces which are continually being aroused within him The longer he struggles the more severe the load becomes the more depleted the reserve of mental energy and the more unstable the mental balance

Failure of adaptation, the consequent conflict set up between the primary and the secondary instincts and the resulting emotional and personal disturbance of the abstract thought have long been recognised by psychologists as the sequence obtaining in the production of a number of types of mental abnormality in civil life

The reason for the diversity of type rests on the one hand on the length of time over which the mental stress has been operating and on the other on the character and temperament of the individual affected while the actual failure of the adaptation may be said to be a ratio between the stability of the mind and the duress of the conditions to which it has been exposed

It is impossible to go into the various psychological processes which may be set up by the continuance of a mental stress or conflict It is usually found that the emotion of dissatisfaction of one or other of the instincts either becomes free and pervades the whole mind, or else becomes attached to a certain line of thought or complex In that case the particular complex selected gradually assumes more and more of the consciousness until if the process be allowed to go on for long enough, a time delusional state is set up

Neurasthenia may then be defined as that term which has been applied in the service to a whole group of psychological deviations from the normal

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

(*a*) [illegible] who show the [illegible] degeneration

(*b*) [illegible] who are the [illegible] nervous [illegible] generalized [illegible]

(*c*) [illegible] who show the [illegible] with [illegible]

[illegible] that the majority [illegible] in the first subdivision

Certain internal secretions play [illegible] instability and a second group [illegible] considered [illegible] in which there are indications of [illegible] &c. The thyroid hypertrophy [illegible] and I have seen several [illegible] thyroid [illegible] at the bottom of the mischief but when were greatly improved [illegible] administration of thyroid extract. I have had one [illegible] neurasthenia in which pituitary [illegible] exist

A third group can be differentiated in which the cases give no indication of any organic defect, but who have shown the neuropathic tendency all their lives and where the family histories are definitely weak as regards the question of mental balance

A fourth group is comprised of toxic factors. The cases give history of alcoholic excess, of recent severe physical illness such as pneumonia, enteric fever, influenza, &c., or of chronic infections such as [illegible] dysentery, &c.

Lastly a fifth group is eliminated where the cases give no indication whatever of predisposition and where the only factor involved appears to be that of mental stress

In general the main symptoms may be classified under two headings as follows

(1) *Mental*.—A distinct syndrome of mental symptoms is present and consists of emotional instability, depression, defective power of attention to any line of abstract thought, more or less intense self absorption and introspection, recurring dreams of the vivid nightmare variety, and a continued state of apprehension

As the degree of mental disorder increases and the nearer the border line of actual insanity is approached, so the emotional element becomes more and more attached to a delusional complex and is prevented from manifesting itself centrally. Especially in cases belonging to the first subdivision of the first group where very slight stress only is needed to overthrow the mental balance there may be absolute apathy and indifference but in those cases the mental state is evidently very questionable and the limit of insanity may be said to have been reached.

(2) *Physical.*—There is an infinite variety in the list of physical symptoms. The most common is that of headache and the patient will usually indicate precise regions of the scalp affected. It is a matter of question whether the headache is a definite referred neuralgia due to over action of the brain, or whether in common with the various visceral symptoms it is not due to the passage of some tic and usually hypo-threshold stimuli beyond the visceral centres on to the higher perceptional areas. Such a state of affairs can easily be conceived under the circumstances of the inhibition of external sense perception and the resultant introspective attention which arises. Insomnia is also a well-nigh constant phenomenon and is usually ascribed to the headaches and to the terrifying dreams.

As far as regards the physical signs of the condition the degree of physical debility depends on the type of case and in the length of time over which the stress has been operating. Cases under Groups 3, 4 and 5 will generally show a good deal of physical wasting, loss of muscular tone &c., while in the cases of the first two groups very little may be evident. In Group 2 special attention is directed to the cardio vascular system. There is a high degree of cardiac irregularity associated with irritability and the accompanying distressing symptoms.

As regards the nervous system itself examination reveals very few definite signs and none which indicate any organic lesion. The constant signs are tremors of the hands and tongue sometimes of the body and head, loss of voluntary control of the muscles of facial expression and a raised perceptional reaction to stimuli though the actual threshold of sensation may be raised.

Out of these I would lay special stress on the loss of voluntary control of expression. The facial aspect of the patient is usually one of anxiety with the brows knitted and the mouth drawn; when the patient is told to look surprised or to raise the eyebrows, smile or show the teeth &c., it is found that the muscular movements which result are quite different from the normal. Often there is absolute loss of movement of the eyebrows, and, when movements are produced, there is much overaction and inco-ordination.

The diagnosis has to be made from exhaustive chronic physical disease, from traumatic lesion or gross organic disease of the nervous system, and from true mental disease. Naturally the process involved is one mainly of elimination, and depends on the variety of symptoms exhibited by the

[illegible]

[illegible] morning [illegible] ally [illegible] but [illegible]

[illegible] ly has [illegible] ular [illegible] in the [illegible] ssts in [illegible]

[illegible] is not [illegible]

[illegible] ally [illegible] on [illegible] the [illegible]

[illegible]

[illegible]

It must [illegible] perpetuated by the [illegible] expect any result from [illegible] changed. Personally I [illegible] hospital bed is [illegible] patient is given more [illegible] right out of all [illegible] a chance of establishing [illegible] break the whole thing [illegible]

In the later stages of [illegible] and some means of [illegible] the patient [illegible] re-incorporated into society [illegible]

Now having got the patient [illegible] properly and partially [illegible] him [illegible]

A great deal depends [illegible] constitutional history [illegible] it is not to be expected that the patient will be [illegible] He is capable of doing work and [illegible] down again [illegible] the service, therefore [illegible] and in this way may [illegible] be invaluable. [illegible] great stumbling stones and the [illegible]

A certain proportion of [illegible] are capable [illegible] conditions and this should be sent to duty [illegible] months where [illegible] is possible [illegible] that period. This should [illegible] not and he should [illegible] will [illegible]

It must be [illegible] depend for their existence [illegible] and as this portion [illegible] children and [illegible] to keep them in [illegible]

In the [illegible] contained [illegible] stumbling blocks [illegible] obtain [illegible] dependents will [illegible]

The question of [illegible] is also [illegible] can always be [illegible] he does not [illegible] sequently there is [illegible] self satisfying instinct and is a general [illegible] organic disorder rather than a complicated [illegible]

[illegible] the [illegible] or less [illegible] at which [illegible] to him to his [illegible] abundance [illegible] such as this [illegible] every [illegible] porated in [illegible] levelled up. The result [illegible] defective [illegible] who previously was able to [illegible] his own choosing now has to fall into [illegible] his comfort suffers. Occasionally he is put into [illegible] unsuitable.

[illegible] responsibility is very difficult to decide and [illegible] is needed before the case is disposed of either to [illegible] forward for survey. In these cases again the [illegible] man's utility in the Service in conjunction with his [illegible] for harm. It is the duty of the medical officer to [illegible] the inclusion of an individual who in a moment of [illegible] is to put the whole of the ship's company in [illegible] his defective mental organization.

TOXIC DYSPEPSIA IN TUBERCULOSIS

By [illegible] HALLIDAY G. SUTHERLAND, M.D. [illegible]
Consulting Tuberculosis [illegible] St. Margaret's Tuberculosis Dispensary [illegible]

As indicated by the [illegible] phthisis derived from the Greek φθίω to waste away, pulmonary tuberculosis is a disease of malnutrition. Under feeding, amongst other [illegible] lowers resistance to infection. Since the disease is established progressive toxæmia impairs not only the mechanism of digestion, but also the nutritive functions of all cells throughout the body, and many symptoms, both early and late, are referred to the alimentary tract.

With a healthy appetite the thought, sight or colour of food causes a reflex secretion of HCl in the stomach and so begins digestion. When the proteid extractives from food reach the pyloric end of the stomach a substance called gastrin is formed in the pyloric mucous membrane. Gastrin is soluble in the blood-stream and is thus carried to the gastric glands on which it acts by exciting a flow of gastric juice. Digestion is therefore a continuous process as long as any food remains in the stomach. Moreover, by means of peristaltic movements the food is thoroughly mixed with gastric juice in the intermediate and pyloric portions of the stomach and is thus reduced to a thin liquid called chyme. This acid fluid induces the pyloric sphincter to relax intermittently, so that a portion of the gastric contents is forced into the duodenum. The pyloric sphincter then remains closed until that portion of the acid fluid is neutralized by the alkaline secretion of the duodenum. When the gastric contents enter the duodenum another chemical messenger or hormone, called secretin, is formed in the duodenal mucous membrane. Secretin is soluble in the blood-stream and is thus carried to the pancreas, where it excites a secretion of pancreatic juice.

These intricate nervous, muscular and secretory functions may be deranged either by toxins in the blood or by gross structural changes in the digestive viscera, and difficult digestion is therefore divisible into two groups, toxemic and structural according to its origin. This classification avoids any distinction between "functional" and "organic" dyspepsia. Indeed no logical distinction can exist because any disturbance of function implies some organic change and all organic changes cause some derangement of function. Structural dyspepsia arises from inflammatory and malignant diseases of the alimentary viscera. Toxæmic dyspepsia may occur in tuberculosis, syphilis, carcinoma, diabetes, Bright's disease, and in anæmias, and is due to the action of toxins circulating in the blood on the nervous, muscular, and secretory mechanism of digestion.

[illegible]

[illegible] that their [illegible] inhibited [illegible] the [illegible] fibres in [illegible] nerve. [illegible] and in [illegible] that gastric [illegible] of [illegible] animal [illegible] society. [illegible] affecting [illegible] possibly [illegible]

[illegible] from [illegible] incision may [illegible] and fats.

[illegible]

[illegible] also occurs [illegible] and these [illegible] toxæmic [illegible] With [illegible] in this [illegible] is [illegible] pulmonary [illegible] bear witness [illegible] dyspepsia [illegible]

[illegible] pulmonary [illegible] detected in [illegible] variety of [illegible] to [illegible] much [illegible] disease [illegible]

[illegible] during [illegible] to [illegible]

the back [illegible] soon after meals [illegible] vomiting [illegible] These symptoms are often [illegible] complaint [illegible] of consumption

With a [illegible] increase of tubercle [illegible] both the [illegible] and the peptic glands is limited [illegible] and this [illegible] usually [illegible] dyspepsia of [illegible] Pain [illegible] fermenting [illegible] and sensations [illegible] in the epigastrium [illegible] pain [illegible] insipid [illegible] vomiting and [illegible]

Tubercular [illegible] usually [illegible] causes [illegible] gastric [illegible] dyspepsia [illegible] pain to vomit [illegible]

Malefic Circle

Many [illegible] have the tissues of the [illegible] centre [illegible] toxæmia reflex [illegible] peristalsis [illegible] the secretion [illegible] impaired [illegible] of the food supply [illegible] resistance is lowered [illegible] is increased and the [illegible] is [illegible] a malefic circle is [illegible]

Tubercular toxæmia [illegible] nerve so that the stimulus of food in the [illegible] secretion of [illegible] throughout [illegible] coughing, hunting [illegible] may also stimulate a hyperæsthetic [illegible] to the stomach it may be [illegible]

Treatment

The [illegible] as many [illegible] as is possible [illegible] at bedtime [illegible] should be in [illegible] with open air [illegible] primary toxæmia is reduced Suitable food [illegible] digestion [illegible] nutrition of the body and therefore raises [illegible] resistance to the [illegible] Consequently toxæmia is diminished digestive function [illegible] improved and a benefic circle is established

Fresh Air

The [illegible] symptoms—loss of appetite and toxæmic dyspepsia—are frequently the first to disappear when a close atmosphere is replaced by a constant supply of fresh air Fresh air is Nature's grand *aperitif* and [illegible]

healthy hunger in place of a jaded appetite. [illegible] part, and patients often eat better when [illegible] nausea still persists, the amount of food [illegible] increased and the patient should be fed [illegible]

Meals

In most cases the dietary should be simpler than that to which the patient was accustomed before treatment. Among rich and poor there are people who prefer a stimulating to a physiological diet and revision of their menus is necessary in individual cases.

TABLE. SANATORIUM DIET FOR SAILORS, SOLDIERS AND MANUAL WORKERS

Articles. Each number refers to the Table of Food Values	Contains in grammes: Protein	Fat	Carbohydrate	Heat value in Calories	Cost during 1917 in London
					Pence
Wheat bread 10	0 12	0 56	10 34	54 7	1 190
Beef (mutton or pork 8 (12 with bone)	47 17	3 40	0 65	[illegible]	7 700
Bacon 2	1 70	45 64	—	431 1	3 000
Potatoes 8	4 53	0 15	16 74	311 3	0 482
Beans, peas or lentils 3	5 95	0 43	14 37	87 1	1 078
Spinach, cabbage or cauliflower 3	1 78	0 25	[illegible]	20 7	0 937
Sugar 2	—	—	16 7	242 1	0 5
Jam 1	—	—	14 17	58 0	0 437
Milk 15	14 03	17 01	21 36	302 8	1 250
Butter, 1½	—	31 54	—	330 5	1 500
Oatmeal, 3	10	4 08	38 20	231 7	0 891
Rice, 1	2 36	0 08	12 40	101 8	0 187
Cheese 2	14 16	3 96	1 70	101 8	2 000
Prepared cocoa ½	—	3 51	7 06	63 0	0 328
Tea ½	—	—	—	—	0 227
Salt, mustard and spices	—	—	—	—	—
Totals	130 7	111 9	382 6	3045 7	18 11½d

[1] £1 (all Naval Hospital beds can be brought up to this Standard Diet by adding the following extras: Sugar ½ oz, oatmeal 1 oz, cheese 1 oz, bacon 2 oz and jam 1 oz.

The simplest food may be spoiled in the cooking, and the gourmet is physiologically right in asking that meals be cooked and served in a manner pleasing to the senses because this stimulates the primary reflex secretion of gastric juice. If a cup of tea with toast be taken on waking the teeth should be cleansed first, as otherwise toxins accumulated in the mouth during the night will be swallowed. Three meals a day are best, at

[illegible] and at 7 p.m. [illegible] be given at 11 [illegible] but many [illegible] without the [illegible] appetite for dinner. Breakfast should be [illegible] made with half milk and boiled for forty-five minutes [illegible] acceptable, some form of prepared breakfast cereals, [illegible] many varieties on the market with cream or whole milk [illegible] soft boiled or poached and mild bacon or raw meat in [illegible] fish, with toasted stale bread, butter, marmalade and [illegible] coffee [illegible] chocolate well diluted with milk.

Lunch includes a cup of soup to which a varying quantity of pounded raw meat may be added just before serving, fish of different kinds with simple butter sauce, well hung underdone steak or roast lamb, chicken or game, cooked vegetables of all kinds, farinaceous puddings, stewed fruit, cream, crème de Chantilly, cheese (Cheddar, Cheshire or petit suisse), toasted stale bread, biscuits, butter, and a glass or more of milk.

Dinner should be lighter than lunch, but in similar lines. Of necessity the menu must vary according to the patient's circumstances. Moreover a diet which on paper contains the proportions of proteid, carbohydrate and fat necessary to maintain health may nevertheless be unsuitable owing to its ingredients, bulk or cost. I have found the following to be a good standard sanatorium diet for sailors, soldiers and manual workers. The pre-war cost was under a shilling a day, but the present cost in 1918 at contract prices is about two shillings. (See Table.)

Alcohol

Alcohol in the mouth excites a reflex secretion of gastric juice in the stomach, but when swallowed it diminishes the activity of the gastric ferments. Most patients, even when accustomed to a stimulant, are better without it, and if given at all the amount should not exceed a glass of sound wine or mature spirits with meals.

When a patient has a poor appetite, a feeble pulse and an irregular temperature he may be benefited by one or two tablespoonfuls of malt whisky added to a glass of milk at meals or if he prefers by an equivalent amount of alcohol in the form of good wine, beer or stout. But if alcohol in any form causes gastric or hepatic disturbances it should be stopped immediately.

After an excessive amount of alcohol some patients feel better for a day or two, their cough and expectoration being reduced. This apparent improvement, due to loss of fluid by diuresis, is both transient and fallacious, because in reality the disease has had every encouragement to gain ground. The tendency of alcohol to increase fibrosis throughout the body is no advantage; pulmonary tuberculosis when associated with alcoholism and premature old age more often runs a rapid than a chronic course, and chronic alcoholism is an obvious hindrance to rational

treatment [illegible] symptom [illegible] one [illegible] strong [illegible] should be fed [illegible] than [illegible]

[illegible]

Milk [illegible] wine [illegible] complaint [illegible] when [illegible] milk [illegible] that [illegible] but [illegible]

[illegible]

[illegible] of [illegible] food [illegible] exception of [illegible] [illegible] demands [illegible] food [illegible] every [illegible] the [illegible] treatment [illegible] [illegible] gains [illegible] [illegible] instance

[illegible]

[illegible] found [illegible] example [illegible] stand [illegible] [illegible] [illegible]

[illegible]

[illegible] weight [illegible] to prevent [illegible] meal of cooked [illegible] cannot be [illegible] digested [illegible] cooked [illegible] as distinct from [illegible] complaint [illegible] help to resist [illegible]

[illegible] constant and often [illegible] functions in [illegible] digestion [illegible] atrophies

[illegible] attention to details Some patients

[illegible] owing to natural and [illegible] at would have taken it [illegible] ought never to be [illegible] served should [illegible] tors much can be [illegible]

[illegible] and commercial [illegible] pose. There is much sustenance [illegible] meat extracts which [illegible] and a large amount of stimulating [illegible] is necessary and its preparations must be made [illegible] meat should be consumed two or three [illegible] after the [illegible] killed and when meat juice is given it [illegible] prepared [illegible] before use. In cold weather all raw preparations of meat [illegible] being served should be gently warmed [illegible] half a pound of raw meat is taken daily and the quantity [illegible] daily is better.

Raw Meat

The pulp scraped free of the fibre [illegible] minced fresh killed beef is served [illegible] Rissoles of raw minced meat with [illegible] slightly warmed, and may be garnished [illegible]

Raw Meat Juice

Muscle plasma or raw meat juice is [illegible] aversion from raw meat or when the [illegible] required in concentrated form. From half pound of [illegible] add half a pint of water in which [illegible] and extract for two hours at 100° F. The [illegible] through a strong straining cloth and served.

It is better to extract the juice by pressure with [illegible] ordinary domestic press. The minimum daily dose is the total [illegible] meat and since the ordinary domestic press [illegible] per cent of the total juice it is necessary to [illegible] to obtain the minimum dose.

Raw Meat Soup

Half a pound of fresh minced [illegible] beef, chicken, veal or mutton [illegible] and [illegible] pint of milk at 100° F. [illegible]

Fresh Peptone

[illegible] of distilled water [illegible] half a level teaspoonful of [illegible] and then strained. The product [illegible] an agreeable [illegible]

Blood Serum

The blood is collected direct from the animal at the slaughter house into a tumbler or jug previously well scalded with boiling water, and is set aside in a cool place to clot for twenty-four hours. A tumblerful of the fresh clear serum exuded from the clot is taken once or twice a day. The blood should never be whipped up with a bunch of twigs, as is usually done in surgical cases because the serum is then colored with hæmoglobin and has a fulfilling appearance. Blood serum costs but a trifle and gives excellent results.

Duration of the Raw Meat Diet

When the patient is gaining flesh and his liver is acting well, raw meat can be continued for weeks or months, but generally as he gets better the strict diet may be relaxed and a more varied menu gradually introduced.

Some intestinal bacillary flora of the intestine converts the albumoses and peptones of raw meat into noxious products which may be absorbed by the portal circulation and carried to the liver, and these intestinal toxins, unless destroyed by the liver cells, cause sickness, biliousness, and even jaundice. Thus putrefactive decomposition in the intestine may be prevented by giving a pure living culture of lactic acid bacilli such as Lactéol, thrice daily after meals, and the clinical test of an active culture is that the intestinal excreta become odourless within a couple of days. Old preparations of lactic acid bacilli, which have been long in chemists' shops, contain no living organisms and are worthless.

When gastro-intestinal symptoms do occur a dose of calomel is given at night, followed by a saline draught in the morning, and a strict milk diet—three or four pints daily, diluted with barley, lime or soda water—takes the place of raw meat for two or three days. After this interlude, a raw meat diet may be resumed.

Raw Eggs

One or two new-laid eggs are broken into a glass and swallowed like oysters. A pinch of salt may be added, but nothing else. Taken before meals, especially an hour before breakfast, raw eggs are very easily assimilated, pass through the stomach in twenty minutes, and are a useful addition to the raw meat diet.

DIFFERENTIATING LIVER

When food is absorbed from the intestinal canal a further process of digestion begins. Just as yeast cells break up any sugar in the surrounding liquid, so all living cells throughout the body oxidize food material in the lymph and plasma. This oxidation, whereby heat is produced, is a constant vital process in which dead food material is broken up under the influence of living matter into simpler products.

[illegible] becomes [illegible] the total oxidation [illegible] by the tissues is increased, the [illegible] downwards is reduced and appetite is [illegible] Consequently, when the available food material is oxidized, the [illegible] cells are threatened with starvation The nervous and circulatory [illegible] then begin to live at the expense of other tissues principally fat and [illegible] which undergo intracellular digestion pass in solution into the [illegible] and are thus consumed in prolonging the nutrition of more vital organs This destructive oxidation may be the attempt of living matter [illegible] a toxin of simple molecular structure but of the mechanism which it [illegible] our ignorance is complete

There has been much controversy about diet during fever Some advise a low diet to diminish the fever by reducing oxidation, while others would provide for increased oxidation by a full diet and so prevent tissue waste but in either treatment there is a fallacy It is assumed in the first that the fever is due to excessive oxidation, and in the second that increased oxidation is the only disturbance of nutrition during fever The work of the liver includes the destruction both of bacterial toxins in the blood and of toxic end-products of digestion which would otherwise pass into the circulation and these functions in common with the functions of all the visceral organs are impaired during fever It is therefore rational during fevers of short duration to ease the work of the organs by a starvation diet During the long continued fever often present in tuberculosis this is impracticable and rational treatment is represented by a diet which puts least strain on the digestive organs and is most easily assimilated by the tissues of the body

A strict raw meat diet meets these requirements At all events it is well to reduce carbohydrate and vegetable food, and in the treatment of intermittent pyrexia the following diet may be necessary for several weeks A raw egg is taken an hour before breakfast For breakfast the patient has buttered toast, a raw meat rissole and a glass of warm slightly diluted milk to which in some cases a tablespoonful of rum may be added Lunch and dinner include raw meat juice raw meat buttered toast, stewed fruit and a glass of slightly diluted milk or a little light wine

Milk Diet

A milk diet requires and obtains for its digestion the weakest secretion of gastric juice and for patients with severe gastro-intestinal disease either toxemic or structural, it may be necessary to alternate a strict raw meat diet with a milk diet Three or four pints of milk suitably diluted with tea, coffee, cocoa, or alcohol are given daily A pleasant change is good buttermilk, soured milk or goat's milk, and the latter most resembles human milk in its proportion of casein to albumen Patients on milk diet who are very ill should have 1½ oz of milk every two hours

[illegible] vessel [illegible]

[illegible]

[illegible] the [illegible] the [illegible]

[illegible]

[illegible]

[illegible]

[illegible] minutes [illegible] bowel [illegible]

[illegible]

[illegible]

[illegible]

[illegible] gastric and pancreatic secretions But when dyspep[illegible] due to tuberculous toxæmia the use of these agents [illegible] to reduce toxæmia is fully justified because we [illegible] any measures direct or indirect which contribute [illegible] the disease and pending the return of normal [illegible] may be given to avert the consequences of [illegible]

Acidi nitro hydrochlorici diluti	[illegible] iv
Infusum gentianæ	ad [illegible] xii

[illegible] be taken thrice daily in quarter of a tumblerful of water [illegible] meals

[illegible] glycerinum pepsini 1 to 2 dr pepsin with diastase [illegible] with nux vomica or strychnine 2 to 1 dr or cellasin (No 2) [illegible] with fruit purposes

[illegible] constipation of the stomach contents and a tendency [illegible] minimal minim of erosion in of tincture of iodine, diluted [illegible] water is taken after meals [illegible] to 1 gr of grey powder [illegible] every second or third day

Infancy

[illegible] feeding with a generous diet may have an occasional bilious attack [illegible] which 2 to 4 gr of calomel are given at night and are followed by 1 dr of sodium phosphate in the morning Stronger salines are apt to cause gastric disturbances and weaken the patient The following pill is valuable as a routine measure every seven or eight days —

Pilulæ hydrargyri	gr xviii
Extracti aloes	gr xii
Extracti belladonnæ	gr iv

Misce et divide in pilulas duodecim

One pill to be taken at bedtime every seventh night

Persistent vomiting in severe toxæmic dyspepsia may be due to a toxic condition of the stomach When food is constantly rejected, the patient should drink one or two pints of warm water, each containing 60 gr of sodium bicarbonate which dissolves the toxic mucus on the gastric mucosa If the draught be rejected the treatment is repeated

[illegible]

With regard to the treatment [illegible] organized routine treatment by [illegible] that the new method was [illegible] proved to be the case. At the [illegible] medical men that a combination [illegible] I include as substitutes in this [illegible] possible that the treatment is fully [illegible] lines and with as little [illegible] necessary. We do not mean [illegible] the disease [illegible] officers before treatment is finally [illegible] we augment the clinical [illegible] ment given [illegible] may know when treatment is [illegible] officers.

We cannot want [illegible] syphilitic lesions [illegible] hence a few results [illegible] formulating a rational [illegible]

(*A*) The [illegible]

Treponema pallidum [illegible] the first injection [illegible] evident from the fact that [illegible] *T. pallidum* do not [illegible] chemical preparation [illegible] or basilic and can thus [illegible] and as these [illegible] this also happens to [illegible] stasis, blood-vessel wall [illegible] of the disease before the *T. pallidum* [illegible] of fibrous tissue round them.

(*B*) The [illegible] the Wassermann [illegible]

The effect of intravenous [illegible] shown in tabular [illegible] the table will also emphasize the importance of in early [illegible] results are taken from the [illegible] of the Royal Naval [illegible] Chatham for the [illegible] 1917 —

N

[illegible]	[illegible]
Wass[illegible] reaction [illegible] treat[illegible]	[illegible]
Wasse[illegible] reaction [illegible] injec[illegible]t given	[illegible]
Total [illegible]	[illegible]

This seventeen cases with [illegible] T P [illegible] with negative blood test give six [illegible] Wasser[illegible] reaction [illegible] treatment and one only positive Nineteen cases with a negative T P examination and with a Wassermann still negative give sixteen remaining negative and three becoming positive Twenty-four cases with T P in the [illegible] lesion and with a positive Wassermann give nine changed to negative, [illegible] Fifteen cases show no change in the blood reaction One hundred [illegible] cases with a negative T P examination (this means that the initial [illegible] still present) and with a positive Wassermann give thirty two [illegible] negative and seventy eight remaining unaltered

(Unfortunately the constant movement of men consequent on the War, is extremely difficult to get statistics of cases whose blood reaction has been positive after their course of salvarsan and have subsequently been under treatment with mercury But some of these have later given a negative Wassermann test

Following on the above I think we can take it as an established fact that a cure can be effected by the use of salvarsan intravenously and mercury intramuscularly more especially in very early cases

The importance of the early diagnosis has been dealt with in the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE on several occasions recently and as this is the most important of all points in the treatment of the disease I must again call attention to it

The following is the routine scheme of treatment which under existing circumstances appears to me likely to give the best results both to the patient in affecting his cure and to the Service in saving loss of time away from duty

(1) All patients seen with any sore which it is considered may be suspicious to have such a sore bathed and dressed with *saline only* until the examination under heading (2) has been carried out

(2) All such patients to be sent to the nearest hospital at once for an examination for the presence of the *T pallida* in the sore Those in which treponema are found to be admitted at once to the syphilis wards and to begin treatment at the earliest opportunity Those in whom the treponema are not found to be kept until six daily examinations have proved negative the cases then to be treated as cases of chancroid

(3) Patients reporting sick in later stages of the disease to be sent to the nearest hospital to begin their treatment at once

(5) The treatment consist of three injections of salvarsan or a [illegible] each to be laid down. The interval between [illegible] to be seven days and the patient to be discharged to duty [illegible] between [illegible] injection.

(6) Mercury to be given weekly by intramuscular injection beginning two days after the first injection of salvarsan and continued for two years as shown in the following scheme:—

Stage [illegible] Two years [illegible] mercury

Injections of mercury	8
Weekly injections	
Two months interval	1
Fortnightly injections	4
Two months interval	1
Fortnightly injections	4
Two months interval	1
Fortnightly injections	4
Two months interval	1
Fortnightly injections	4
Two months interval	1

(7) The blood of each patient to be sent in for Wassermann reaction every three months and on every occasion in which the result is positive he should be sent as soon as possible to hospital for a further course of salvarsan.

(7) The patient not to be considered cured until he has had a negative Wassermann reaction for twelve months, the blood being tested every three months.

(8) Should the patient still give a positive Wassermann reaction after his two years course of mercury has been completed he should have four months stand off and at the completion of this time his mercury course should be recommenced.

(9) When *T. pallida* have been found in the initial lesion or when six examinations have proved negative the sore can be treated on general surgical lines.

The above should, in my opinion, prove a satisfactory routine as far as our present knowledge goes and under existing circumstances but finally the establishment of a hospital where all venereal patients could be kept under treatment and given useful work to do until they were completely cured would be even more efficient than any routine.

THE TREATMENT OF CHRONIC GONORRHOEA

By Fleet Surgeon R. HUGHES, R.N.

There are probably very few common venereal diseases which are [illegible] with such an amount of local lesions that prove so intractable to treatment as cases of chronic gonorrhoea. In not a few instances the results of prolonged treatment have proved so disappointing that they well nigh come under the category of incurable diseases. The degree of mental worry and neurasthenia that long-standing symptoms of gleet produce in addition to the tendency to systemic complications, are of course well recognized, and surgeons will often [illegible] the instances in which they have been compelled to [illegible] their [illegible].

Up to about a few years ago it was always my practice to treat symptoms of chronic gonorrhoea by daily irrigation of the urethra with antiseptic and astringent solutions passed through an elastic catheter, and alternating this treatment with the frequent passage of sounds. This method, in combination with sound hygienic constitutional treatment, frequently produced a permanent cure, but was also attended by not a few failures, cases of apparent cure with no sign of any mucoid discharge in the meatus and complete absence of threads in the urine on reverting to ordinary sexual life returned for treatment with their gleet as bad as ever, or possibly with symptoms of acute or subacute urethritis.

About six years ago I had frequent opportunities of observing the practice in the venereal wards of hospitals in Southern Italy, where attacks of gonorrhoea and syphilis are of a peculiarly virulent type, and it is almost the rule rather than the exception in that part of Italy for acute gonorrhoea to resolve itself into the chronic variety before being finally cured.

I was so impressed with the thoroughness with which the Italian surgeons tackled this obstinate complaint and the excellent results they obtained that I promptly adopted their method of procedure. There is no very particular departure in the technique they employ. Its success depends upon the combination of methods applied at the proper regular intervals under the supervision of a surgeon. Briefly, it consists in the application of a strong solution of silver nitrate, followed by urethral massage and dilatation of the urethra with sounds.

The technique is as follows: Having ascertained first the extent of the [illegible] [illegible] involved by means of [illegible] with sterilized water, a [illegible] per cent solution of silver nitrate is then applied. The most scientific way of doing this of course is by the aid of an urethroscope, but it requires [illegible] practice on the part of the operator and is not always practicable. An excellent substitute is a Guyon's method [illegible], which consists of a

[illegible] is membrane

[illegible] to the requisite length and [illegible] it is then withdrawn about an inch and in [illegible] until the meatus is reached by which time [illegible] may be induced through. On completion of the [illegible] that the patient remain in bed for the next two [illegible] the [illegible] injection which sometimes [illegible] the application [illegible] produce a third [illegible] usually [illegible] about twenty-four hours.

During the next three days the method is missed about three times during the twenty-four hours. After the first [illegible] an intelligent patient can perform this part of the treatment himself. On the fourth evening the [illegible] followed by the massage as before. This may have to be repeated with the same interval from five to seven days [illegible] Generally however there is such marked improvement after the fourth to fifth application that the third part of the treatment has seldom to be repeated. The largest sound compatible with the size of the urethra is passed into the bladder as soon as the patient can [illegible] there for three or four minutes. This is repeated for four or five nights after which the meatus is left undisturbed for [illegible] days when in all probability a complete cure will have been effected. If not the process will have to be repeated in a week.

The patient should be given a [illegible] but avoiding red meat alcohol and tobacco and advised to [illegible] Moderately large quantities of fluids unsalted [illegible] with a mixture containing liquid santal flav will materially assist in keeping the urine in as non-irritating a condition as possible. Even after the entire disappearance of all threads it is advisable that the patient refrain from alcoholic and sexual indulgence for at least another two months.

My own cases have reacted so well to this mode of treatment that I am persuaded to describe it in detail in the hope that it may prove of value to your readers or, at any rate as a possible alternative to their own practice.

A PICTORIAL DESCRIPTION OF THE ROYAL NAVAL HOSPITAL, GRANTON.

By Surgeon H. M. Whelan, R.N.

Granton Hospital appearing, as it does, among the Royal Hospitals in the Navy, I feel it is possible that the following description may be of interest to medical officers, especially those afloat, as this hospital and the R.N. Sick Quarters, South Queensferry, now share practically all the cases sent ashore from the Fleet in Scottish waters. Even those patients sent to hospital ships whose illness is in any way prolonged almost inevitably fetch up here, though their stay is generally only too brief.

One has often heard the question, "What and where is this new place Granton?" The following short article may answer this question to some extent and give medical officers some idea as to what sort of place they are sending their cases.

Fig. 1.

The hospital is situated on high ground to the north of the City of Edinburgh and between it and the Firth of Forth. The view from it is magnificent, on a clear day the Pentland Hills overlooking the city, with the famous Arthur's Seat in the foreground, can be seen stretching away to the south, whilst the Firth and Burntisland are seen to the north. The grounds are well laid out, being particularly pretty in early spring and autumn. There are avenues of lofty trees affording ample shade for convalescents in summer. The grounds are more or less open, only a low privet hedge forming the boundary, the absence of the usual glass topped stone wall being most refreshing. This has not been taken advantage of by the patients, cases of breaking out of hospital being very rare. Both officers and men seem to be immediately taken with the place, specially

[illegible] coming from the northern bases. There is no [illegible] and [illegible] staffed by nurses in their picturesque but usual [illegible] hits [illegible] tonic effect on the jaded nerves of a man who [illegible] keeping at sea for a prolonged period.

The buildings were originally those of the Leith Public Hospital [illegible] built in 1894 and opened in September, 1896. In the summer of [illegible] were opened up by the Admiralty for the taking over of the building [illegible] Naval hospital. On October 2, 1916, the place was commissioned [illegible] Naval Hospital Granton and on October 16 the first Naval patients [illegible]

As will be seen from the above plan (fig. 1) the building is [illegible] system and consists of (1) four main pavilions, (2) a [illegible] which was originally used as an isolation block but which [illegible] into an operating theatre [illegible] officers' block. This [illegible]

[illegible]

(3) A three storey [illegible] lodge building, which [illegible] (6) A garage, (7) A [illegible] (10) A disinfector [illegible] above beadings and [illegible] the pavilions marked [illegible] in plan [illegible] identical.

Each pavilion is [illegible] to two main [illegible] the central part of the building which is [illegible] nurses, (5) Pantry, (6) Scullery, (7) A [illegible] sister [illegible] the centre of each pavilion consists of [illegible] is isolated [illegible] but not turned into [illegible] officers of [illegible] lower rank of [illegible] These cabins have [illegible] and [illegible] self contained [illegible]

every [illegible] cabin has windows looking [illegible] South [illegible] arrangement each of these [illegible] eighteen [illegible] 21 645 feet. It will be seen [illegible] has well [illegible] space [illegible] allotted to him. The [illegible] of painted [illegible] The decks of polished boards [illegible] end of each [illegible] one side consisting of a compartment [illegible] with sinks [illegible] and three water closets and of the other side [illegible] The two doors in the photograph [illegible] and bathroom referred to [illegible] beds be placed down [illegible] each [illegible] referred to before [illegible] capacity of [illegible] and forty eight [illegible] A great [illegible] tables chairs [illegible] taken [illegible] of invalid [illegible] such [illegible] by the generosity of the [illegible]

[illegible] photograph (fig. [illegible]) the [illegible] along the [illegible]

[illegible] — [illegible] large [illegible] small [illegible] should be [illegible]

[illegible] They [illegible] There are [illegible] beds. The [illegible] fixed lights [illegible]

The [illegible] officers [illegible] the purpose, and [illegible]

The [illegible] isolation block, has undergone [illegible] It is divided into two [illegible] communications between these [illegible] the southern end the door [illegible] will therefore be [illegible]

[illegible] is divided into two [illegible] These have been [illegible] and under) and [illegible] Warrant Officer [illegible] the same as one of [illegible] and two lavatories [illegible] to which both wards [illegible] most useful as [illegible] heated by hot [illegible] that the officers [illegible]

[illegible] contain [illegible] prefer [illegible] [illegible] [illegible] officers to occupy [illegible] cabin in [illegible] of house [illegible] regards putting [illegible] [illegible] rank

The northern [illegible] consists [illegible] wards to the south [illegible] used for post [illegible] the cold [illegible] lavatories has [illegible] pattern has been [illegible]

Fig 3

The northern ward i.e. that corresponding to the Commissioned Officers ward of nine beds in the southern section has been divided into two The outer portion is now used as a sterilizing and instrument room It is fitted with a steam sterilizer for instruments a large hush and tray sterilizer cupboards &c for instruments and wash hand basins for the surgeons The deck is of scrubbed wood and is heated by hot water pipes The partition is made of wood and glass, and is fitted with sliding doors wide enough to take a trolley and patient The deck is made of a special impervious composition and is drained to a sink, well away from the centre of the room The lighting by day is excellent and has been effected by enlarging the ordinary windows of the ward At night it is also extremely good, being effected by means of five 100 candle power incandescent gas lamps, clearly seen in the photograph (fig 3) Heating is by steam pipes, and there is also a gas stove for use on exceptionally cold days All the steam for the sterilizers &c is supplied from the central boiler house marked H on the plan (fig 1) The large sterilizer mentioned is used exclusively for dressings not

only for the [illegible] to the general [illegible] wards [illegible] to [illegible] are [illegible]

This [illegible] is now [illegible] and was opened [illegible] period [illegible]

17 [illegible] It is a building [illegible] to several [illegible] among which [illegible] (3) butler [illegible] (4) [illegible] (5) [illegible] offices [illegible] the entire hospital [illegible] and staff (except A A D's) done here They are [illegible] is the cooking of the [illegible] Tho food [illegible] are cooked here in specially heated [illegible] Still Nurses [illegible] and Service A A D messes [illegible] this [illegible] separate portion of the building

FIG 4

The Tulip (4) —The small building soon in the foreground of the picture photograph was originally the porter's house but is now used as the [illegible] telephone room and general office There are two rooms the [illegible] bathroom scullery and lavatory The largest room is now the [illegible] the remaining ones are used as follows Three bedrooms for the [illegible] and A A D staff and a sitting room There is a telephone [illegible] communicating with all parts of the building and also a public telephone [illegible] signals messages &c All the hospital routine books such as [illegible] change book alphabetical book casual victualling book [illegible] kept by the three officers of the staff mentioned above

The Tulip interior (4) This was specially built as such when the hospital [illegible] opened Since the taking over of the hospital the nook has [illegible]

tremendously as not only [illegible] the general hospital work [illegible] have [illegible] of the bacteriological work of the Fleet in Scottish waters. Wassermann [illegible] is done by weekly [illegible]. It is well lighted and fairly well fitted, but perhaps [illegible] large enough for its present purpose. One room in this building is [illegible] bath and x-ray room. The amount of x-ray work done here is small [illegible] of there being no electricity laid on. The apparatus in use is one of [illegible] Service Afloat pattern [illegible] accumulators which [illegible] not [illegible]

F

Gy[illegible] [illegible] bronchitis [illegible] ambulant [illegible] the drainage [illegible] the Medical [illegible] Scotland. There is a continuous [illegible] which is [illegible] store.

Mort[illegible] (7) [illegible] building which is divided by sliding [illegible] (7) a [illegible] mortuary proper. There is a room of [illegible] six bodies [illegible] by curtains and behind glass [illegible] of the time when the [illegible] infectious hospital). Incidentally [illegible] is entirely separate [illegible] entrance to the building.

Engineer's H[illegible] [illegible] There is a small house on the exit [illegible] the grounds to accommodate the engineer who is in charge of all [illegible] arrangements, [illegible] in the laundry.

Laundry (9). This is a large modern steam laundry fully equipped with the latest washing, drying and ironing machines. The amount of work done, which is extremely large, is the hospital being, more or less, a cleaning station [illegible]

[illegible] over of the [illegible] tables (so many [illegible] [illegible] Allied to the [illegible] entirely female ap[illegible] [illegible] very [illegible]

(10) —This [illegible] all building at [illegible] the laceda[illegible] on the usual plan, th[illegible] connection [illegible] the [illegible] ed and the clean [illegible] other. The [illegible] itself is [illegible] cylindrical pattern, and [illegible] with steam from the laundry [illegible] to the best that most [illegible] the health work of [illegible] death [illegible] installation there is [illegible] considerable amount of [illegible] room [illegible] and this has been [illegible] by disinfec[illegible] off a portion of it and [illegible] big[illegible] store for luggage and [illegible] of the patients.

Staff House (11) —This [illegible] worth of mention as it serves so many [illegible] It supplies steam to all the [illegible] in the theatre heats the [illegible] officers blocks supplies all steam for cooking in the kitchen [illegible] and supplies hot water to the entire administrative block. Three [illegible] men employed, whose duties [illegible] of tending this the laundry [illegible] boilers. They work in three shifts of eight hours each.

The Hospital —When the hospital was first opened it was staffed [illegible] [illegible] baby sick berth stewards. On February 26, however a [illegible] was made. The whole staff now [illegible] in one day by lady [illegible] Voluntary Aid Detachments. Naturally at first con[illegible] in [illegible] experienced especially as regards the book keeping [illegible] in almost incredibly short [illegible] time the whole concern [illegible] within, but more smoothly than before.

[illegible] consists of a fleet surgeon in charge one surgeon R N one [illegible] three temporary surgeons [illegible] officer (hon[illegible] [illegible] This allows of one surgeon in charge of each of the male [illegible] in charge of all officers. Each surgeon also has a special job [illegible] the bacteriological laboratory &c. There are two Naval sisters and [illegible] also allows of one sister on night duty and one in charge [illegible] There are six staff sisters allowing for one in each pavilion [illegible] charge of the block in the absence of the sister. The [illegible] staff is made up of V A D s both on day and night duty [illegible] V A D live at the hostel which is a large holding requisitioned [illegible] and within easy reach of the hospital.

Other Staff —V A D s.—Under this heading numerous and multifarious spheres of action are included among the most important of which are the following —

(a) Four lady cooks who do *all* the cooking of the establishment except of course the hostel.

(b) Three employed in the lodge who do the duties of the wardmaster's office in the southern hospitals. All the books are kept by these ladies, signals sent and received letters distributed &c. &c.

(c) A lady butler in charge of victualling stores.

(d) A lady baggage mistress, who is responsible for all baggage of patients [illegible] on leaving the hospital.

(e) A store officer's clerk.

(f) A lady dispenser.

(g) A lady laboratory attendant.

(h) The general staff of the hostel, who cook for and generally look after the V A D s.

(i) A clerk for the S M O s office.

Maids are employed by the surgeons sisters and staff nurses messes. In addition there are kitchen maids and each pavilion has a charwoman who lives out and who does the heavy work such as the polishing of grates. The only male members of the staff (excepting the medical officers) consist of a butcher

and what [illegible] as the mobile party and the [illegible] party consists of twelve members of the Military Staff under direct control of M.T.O. Scotland. They are stationed in [illegible] building situated in the northern [illegible] grounds. The [illegible] useful as it is, is integrated throughout by [illegible] would need an article about forty extra [illegible] mobile party are as follows: (1) They are employed in [illegible] (2) they do the heavy lifting such as getting cots [illegible] man is permanently told off to assist in the baggage store [illegible] mental or delirious cases, &c. They are often called upon [illegible] from the hospital but there is a working arrangement with M.T.O. [illegible] least four remain at the hospital for cot carrying, or [illegible] much too heavy for nurses to deal with.

Fig. [illegible]

The [illegible] hospital was [illegible] factory [illegible] The officers [illegible] regards food and light has been [illegible] contented, and fully appreciate the small [illegible] nurse however efficient he may be [illegible] This efficiency is not only marked in the wards but [illegible] hospital routine. The books are accurately kept and all [illegible] earned out.

The Work of the Hospital. Since opening on October [illegible] 1916 up to September 30 1917 3,009 cases have passed through the hospital. Of these [illegible] have been discharged to other hospitals, 48 have been invalided and sent to duty, 11 have died, 13 have been invalided and [illegible] Department. It will be seen from these figures the extent to which the central element is used as a clearing station. Patients are received from many sources, chief of which are:

(1) Evacuation of hospital ships from the other bases. These cases usually arrive by hospital train from Invergordon or Thurso. Occasionally the hospital ship herself discharges her cases at Firth Docks.

(2) Cases from the Fleet stations in the Firth of Forth. These cases arrive by hospital boat and are landed at Granton, these patients being brought from there to the hospital by ambulance.

(3) Cases [illegible] from minesweepers, [illegible] hoses of Leith and Granton

(4) Cases [illegible] during and coastguard stations, sick ashore &c

The [illegible] convalescent hospitals of Bute and Dungavel in which cases [illegible] from Edinburgh and a very large number of cases are [illegible] establishment. Bute is more than a convalescent home there [illegible] which is used largely by Surgeon-General Sir William McEwen R N Consequently a large number of pre operation cases are sent over

Laboratory —Most of the bacteriological work of the Fleet in Scottish waters is done in this hospital Wassermann reactions are done in weekly the number done during the year being 2 [illegible]

Surveys A very large number of surveys chiefly on officers have been carried out the majority being on those officers who have been granted unemployed time after prolonged sickness or wounds in action

Convalescence —This hospital has the power of invaliding men who are resident in Scotland A certain number of members of the Royal Naval Division have been returned here from military hospitals after treatment for final invaliding

Entry of Temporary Medical Officers —Edinburgh being a university town, a certain number of recently qualified gentlemen have been entered direct by this establishment as temporary surgeons R N

Preparation for immediate use —In the event of a fleet action this hospital could be rapidly emptied and prepared to receive wounded All cases fit to carry on light duty would be sent to the bases to assist in the landing of wounded Convalescence would be at once discharged by hospital train to the convalescent homes in the country and the emergency beds in the wards and cots in the Bungalow previously mentioned would be rigged

Additional Staff —In November 1917 it was decided by the Admiralty that the work in the laboratory necessitated a surgeon devoting the whole of his time to it Accordingly a supernumerary surgeon has been appointed and also a sick berth steward especially qualified in laboratory work

New Buildings —At present building operations are proceeding in the adjacent field (shown on the general photograph fig 1) in which it is intended to accommodate another 200 beds and the staff necessary to their upkeep These buildings are of brick and concrete and are also on the bungalow system They are at present intended to be used solely as emergency beds and not as part of the general hospital

Fire precautions in case of Fire —The hospital being built on the bungalow system there is little or no danger of actual loss of life in the case of fire in any particular as all cases could be removed before a fire had any chance of getting a hold on the building As will be seen (vide fig 1) the administrative block is the only building of more than one storey There are numerous staircases in this building all of which are built of stone so there should be ample means of escape Each pavilion and each floor in the administrative block has a fire hydrant of its own, supplemented by buckets of water and sand In addition there is a fire cart containing a large hydrant and numerous lengths of hose and fire implements such as axes &c This cart is manned by the mobile party previously mentioned

The foregoing notes show that the Navy now has a fully equipped and efficient hospital in Scotland which I think most people will agree is the fulfilment of a long felt want It is run on novel lines so far as the Navy is concerned but is now long past its experimental stage and judging by the work done in the past year it has more than justified its existence in every way

In conclusion my thanks are due to Fleet Surgeon E C Lomas C B D S O for granting me every facility to compile the foregoing notes, and also to Sick Berth Steward Tully who took many of the photographs

TEN MONTHS WITH THE RUSSIAN ARMY

[illegible]

[illegible] of a few [illegible] impressions while [illegible] hundred cars in Russia [illegible] of [illegible] medical officers [illegible] England [illegible]

[illegible] orders to sail from [illegible] others and [illegible] 1916. The journey to Archangel was [illegible] was [illegible] Thus was partly due to the fact that [illegible] secret was [illegible] and partly because our ship did [illegible] not being in very good order.

[illegible] was some speculation during the voyage as to which we should [illegible] Archangel before the port closed to the [illegible] metal so late in the year from [illegible] causes but the Northern [illegible] (for us) was rather later in closing than [illegible] also alarms even before we arrived at Archangel.

The port still contained a considerable [illegible] they were being discharged as quickly as possible and so [illegible] away full discharged when it was thought that the [illegible] authorities were evidently not going to risk having [illegible] year repeated when, according to report, a considerable number of ships [illegible]

The principal place for discharging ships is on the opposite side of the river to Archangel and about five or six miles up stream. Here there is a large wharfage space acres of wooden sheds and various offices evidently a mushroom growth since the commencement of the War. In spite of the fact that the season was practically over, there was still considerable activity at this place and large quantities of munitions of all kinds were awaiting transport by rail.

Five days after our arrival we went through a very unpleasant experience in the form of a tremendous explosion. In the second ship ahead of ours—a Russian with munitions from New York—a violent explosion occurred, shortly followed by a second. At the time (about 1 p.m.) I was seated with another officer in the smoking room of our ship. There was a regular cascade of broken glass from the skylight, the door was blown in, and most of the furniture in the apartment collapsed. Happily neither of us was hurt, and our first impression was that the ammunition in our No. 1 hold must have gone off. We made our way on to the deck but could not get a very clear view owing to the intervening ship, so went aft to the gangway and walked on to the wharf. There here we could see the Russian ship burning furiously, and she appeared to be alight from stem to stern. Opposite the ship another fire had already started about thirty or forty yards inland, and seemed to be well under way.

Nearly all of our party were over at Archangel on fatigue, and it is fortunate that such was the case, as there might have been several casualties if they had been on board.

Having seen for myself the enormous quantities of ammunition stored in the sheds all round the area of the fire, I deemed it advisable, after having ascertained that no one either of our party or the ship's company had been seriously hurt, to withdraw a little further from the scene of the fire. We had not gone more than 300 or 400 yards before a third tremendous explosion took place, larger than either of the others. A mushroom of black smoke and sparks was hurled into the air for hundreds of feet, and for some moments there was a perfect rain of flying fragments, so that we took shelter under the lee of some trunks until the storm was over.

Our [illegible] seemed [illegible] explo[illegible]

[illegible] shells [illegible] quickly as po[illegible] getting away [illegible] indeed no easy [illegible] of going off at [illegible] to neighbourhood.

Meanwhile the [illegible] and consid[illegible] ting under hef[illegible]

While this no[illegible] [illegible] to where [illegible] the [illegible] was [illegible] [illegible] began to [illegible] [illegible] there [illegible] the spot [illegible] Red Cross [illegible] about Japan.

He though rather [illegible] Arabian [illegible] having by the [illegible] obtained a [illegible] a spound cotch going [illegible] the [illegible] naval off[illegible] sed to find out how [illegible] absence. [illegible] ive could see that the [illegible] the whole scene [illegible] of the [illegible] [illegible] hid [illegible] them [illegible] about.

We ascertained that our own ship was still afloat [illegible] double anchor [illegible] that [illegible] hip had been completely [illegible] which the explo[illegible] ted.

The next thing [illegible] changed [illegible] at the [illegible] hospital where several men had [illegible] the ships [illegible] the majority of them [illegible] the [illegible] Russian offence had not visit [illegible] of the explosion, and [illegible] had been done in the [illegible] that met the eye. [illegible] the side of the wheel [illegible] evidently exploded.

The power station [illegible] had been immediately opposite the ship which stood [illegible] the salvage operations were not [illegible] to the [illegible] period of daylight until an [illegible] ered slender [illegible] were able to tap sufficient electric [illegible] part of the yard.

There was a broad zone of [illegible] which look[illegible] exclosure had passed across it. Wooden [illegible] had been knocked [illegible] the roofs of sheds for a consid[illegible] had been [illegible] badly damaged. Everywhere could be seen [illegible] of steel and [illegible] the ground some of these of constr[illegible] and evidently portions of the hull of the Russian ship of which there was practically nothing left above the water. The English ship next the [illegible] to the water's edge [illegible] the 100 ton floating crane which happened to be alongside at the time [illegible] wrecked. This was [illegible] there [illegible] material ships still afloat with heavy weights [illegible] and there was no tackle capable of hoisting such.

We heard some horrid stories of miraculous escapes and one of them [illegible] for by the Russian naval transport officer seems worthy of record. He declared that the man in charge in the bio tower had been slung like an arrow out of it heavy into the river and had swum ashore to an island opposite.

When we visited our own ship it was seen that a clean sweep had been

made of h [illegible] a seaworthy c[illegible]
Close to th[illegible] led like part [illegible]
and must [illegible] from the deck [illegible]
Russian ship [illegible] nous piece of st[illegible]
about 8 yd [illegible] from the same ship [illegible]
the saloon th[illegible] factured in all [illegible]
and the h[illegible] of h[illegible] were badly [illegible]
Strangely [illegible] broken [illegible] there was [illegible]
another [illegible]

The almo[illegible] organiz[illegible] resulting from this episode [illegible]
delay in the [illegible] dispatch of our train and it was out until about
lo to ght [illegible] actually started on the long journey across Russ[illegible]
to the Roum[illegible]

Of this long journey there was nothing not worthy except that it took nearly three weeks. The speed of a goods train in Russia never exceeds about ten miles per hour and a most of the track is single line there are innumerable inversions delays at passing places. We were lo[illegible] in passing forty eight hours spell in Moscow—a welcome break in the monotony of the journey.

Our train eventually reached Reni on the Danube and close to the Roumanian frontier on December [illegible]. At this time the vicinity of the Dobrudja was well nigh complete and shortly afterwards some of our [illegible] began to arrive in river barges together with their cars from a place further down the river.

On December 25 I received orders to accompany a small special service squadron which was being sent up to Braila to [illegible] the orders of the —th Siberian Corps. Surgeon Maitland Scott and a yeomanry three sick [illegible] fittings and a suitable selection of medical [illegible] ment [illegible] a large gunboat barge containing the squadron and its cars and during the night were towed up stream reaching Braila the following morning. The journey is not a long one as regards distance but there is a four or five knot current hence the speed is not very great.

Braila is one of the largest grain exporting towns on the Danube and in peace time, must be a very busy place. We did not spend any time longer than was necessary to disembark the cars and then proceeded in a north westerly direction, with orders to report to a certain Divisional Staff at T——.

Owing to the bad condition of the road (although marked as chaussée on the map), which got worse as we proceeded dusk had fallen before we could make the appointed place. Accordingly billets were secured for the night in a village.

Next morning the officer commanding went on in a Bor lorry to T—— but had considerable difficulty in getting there. It was evident that the road was out of the question for heavy cars so two or three light ones were left to examine the roads in the vicinity and the heavies were ordered to return to Braila to operate along the big chaussée road to the south of the railway.

This road proved to be quite good—for a Roumanian road—though there were places with the most appalling holes which necessitated very careful driving and it was not safe to travel after dark for fear of damaging the cars headlights not being allowed near the Front.

At this time the enemy were slowly but surely advancing and the Russian front line was getting pretty heavily shelled. Our cars were engaged on December 26 in a brisk little rearguard action one officer being wounded in the neck, and the officer commanding receiving a slight wound of the back, while restarting his car under heavy fire but remaining on duty. The Corps Staff were very pleased with the useful work done by the cars.

By the end of the year it seemed certain that Braila must fall as the enemy were pressing hard further to the north, and heavy drum fire could be heard

[illegible]

[illegible] was [illegible] large pr[illegible]

On la[illegible] owing to [illegible] destroyed after then [illegible]

[illegible] nation of the town co[illegible] ders to get all our cars [illegible] Even while we were [illegible] ould be seen and the so[illegible] factories containing m[illegible]

[illegible] der and Staff of the [illegible] Brila before [illegible] walked [illegible]

Our [illegible] ing after a very tedi[illegible] only about ten to fifteen miles The town [illegible] like the latter [illegible] evidence of being a [illegible] lation is a very cosmopolitan one and [illegible] ly occupied in the grain trade One [illegible] only [illegible] upon them

The [illegible] hospital which was very well supplied [illegible] but they handed it over to the Russians who at [illegible] for which purpose it was extremely well adapted

At the [illegible] signs and symptoms that the town was not expected to [illegible] Factories were being visited by demolition parties [illegible] so that it should not be of any use to the enemy [illegible] and coal yard (belonging to a German Company) was [illegible] Hence it was no uncommon sight to see all sorts [illegible] carrying or dragging away as much timber as they could [illegible] also all kinds of vehicles crowded like flies round the yard [illegible] off with a full cargo of the booty However in the long run the enemy never passed the Sereth nor did they really make any serious attempt to [illegible] so and during the whole of our stay the Russians remained in occupation of [illegible] four or five miles on the other side of the bridge head The Sereth railway [illegible] had to be blown up and though occasionally hit by shells was [illegible] fit for foot and [illegible] traffic all the time

The enemy were not long in getting artillery into position on a hill across the [illegible] and frequently used to drop shells along the quay and in the neighbourhood of the station but it was only rarely that they paid any attention to the higher parts of the town Possibly the range may have been too great

Snow started falling heavily on January 26, 1917 and the hard weather continued almost without intermission for about eight weeks The depth of snow on the roads rendered it impossible to use the cars, so our little force was forced to turn itself into light artillery and machine gun parties They did good work with light guns on trailers in destroying enemy advanced posts and [illegible] gun emplacements

The river Sereth before its confluence with the Danube just above Galatz [illegible] a very winding course Along the sector held by our corps the front [illegible] for the most part followed the river bank. Opposite one of the loops forming [illegible] towards the enemy there was a mill or some such kind of building [illegible] the enemy used as an observation post and also for machine guns Our

[illegible]

[illegible] longed to [illegible] received [illegible] for the purpose [illegible]

[illegible] and parts [illegible] along the railway which [illegible] only proceed [illegible] as the [illegible]

[illegible] journey—the Roumanian [illegible] delays—we eventually [illegible] we [illegible] night.

[illegible] we started on the [illegible] heavy going through the snow [illegible] often went to above [illegible]

The [illegible] at this point are [illegible] cut down a tremendous lot of [illegible] for another [illegible]

Our [illegible] through the wood looked very [illegible] it was very easy to miss one's way [illegible] eventually arrived and were very glad [illegible] long tramp. We then started off [illegible] walking a mile or two through the wood [illegible] communication trench.

There must have been a good deal of [illegible] accompanied by the constant loud crack of bullets [illegible] where we were we could not be seen by the enemy [illegible] at a venture in hopes of hitting somebody [illegible]

The commander [illegible] and also provided plenty of [illegible] We [illegible] I took up my station with my [illegible] thirty or forty yards behind the gun.

The range of the objective [illegible] the target, and as I was told by the observing [illegible] little [illegible] soon caused [illegible] considerable [illegible] and [illegible] The [illegible] the only [illegible] followers of the people [illegible]

As soon as the [illegible] to linger, and we wended our way [illegible] should have [illegible] to start [illegible] way through the wood, and although a few [illegible] of them burst anywhere very near.

This was only one of the many [illegible] took part, and judging by the [illegible] the enemy must have been considerably [illegible] seemed to succeed in spotting the gun [illegible]

The Danube became [illegible] thus for four weeks. [illegible] that in most winters the river did [illegible] suspended for so long a period.

During this period of [illegible] the [illegible] population [illegible]

[illegible] of [illegible] and log [illegible] over plentiful [illegible] [illegible] shape [illegible] spectacle in these [illegible]

When [illegible] the thaw really [illegible] was surprising, [illegible] [illegible] broke up. The [illegible] quickly and [illegible] [illegible] of the top of the [illegible] On the other side of the Danube [illegible] [illegible] we weren't [illegible] that [illegible] never became [illegible] [illegible] happened that there [illegible] still hill within [illegible] [illegible] the country [illegible] position with [illegible] [illegible] The hon[illegible] [illegible] pantomime the reason [illegible] [illegible] difficulty in [illegible] supplies of ammunition [illegible]

[illegible] over the Sereth and most [illegible] [illegible] between Galatz and Braila lessens a swamp. Just [illegible] [illegible] the only possible place for the advance of posts of [illegible] [illegible] warfare developed into very little [illegible] [illegible]

[illegible] heard the news of the Tsar's abdication but very few details [illegible] the fact that there had been two or three days fighting in [illegible] Things seemed to [illegible] the same as usual among the troops [illegible] only sign of the times was a procession with red flags to the [illegible] by the Corps Commander and then [illegible] playing the Marseillaise which they seemed to have [illegible] appropriate equipment for it.

[illegible] aeroplanes used to drop proclamations addressed to the [illegible] which the main theme was that Enghod had caused the [illegible] that she had manœuvred the deposition of the Tsar and [illegible] Wa[illegible] being carried on solely for England's benefit.

[illegible] the enemy shelled and set on fire a big flour mill [illegible] provided an attractive target from across the river [illegible] had not destroyed it before. It belonged to an Hungarian [illegible] The output of flour was rather restricted [illegible]

[illegible] no time we had become very good friends with the officers [illegible] Social amenities were frequently exchanged. The Chief [illegible] who afterwards became Corps Commander was a [illegible] old gentleman and a very good friend to all of us. He [illegible] us to various entertainments at the officers' mess [illegible] excuses from any of us. Just before Lent we had to go [illegible] to help eat [illegible] kind of pancake. It seemed to [illegible] petition to see who could negotiate the largest number [illegible] to be surprised at our (to them) rather limited [illegible] district in question.

[illegible] very nice house belonging to an English lady who had [illegible] and our friend the Chief of Staff was a frequent [illegible] unless player and I think he came principally to get [illegible] who was an expert. If the latter happened to [illegible] bad to be sacrificed to keep the old gentleman [illegible] speak any English and the only medium of conversation [illegible] of both sides.

[illegible] a very pleasant General of Division and I [illegible] was our ration jam of which he seemed particu[illegible] and often to come to tea with a loaf of excellent [illegible] which was very welcome seeing that such a commodity [illegible]

[illegible] the [illegible] we [illegible] gave a luncheon at the Prefecture to the

[illegible] we are all [illegible] [illegible] often [illegible] exp[illegible] had [illegible] intelli[illegible] length [illegible]

O[illegible] orig[illegible] really [illegible] where [illegible] account [illegible]

Sun[illegible] and str[illegible] Prelect to [illegible] account [illegible] two w[illegible] map [illegible]

On M[illegible] for the hist[illegible] and the many fi[illegible] been at the gates

The winter [illegible] preparing for the [illegible] that the Force was [illegible] that a big push [illegible]

On June [illegible] of the [illegible] Army to [illegible] attached to the [illegible] was to visit a[illegible] base. The [illegible] seven hours journ[illegible]

The journey [illegible] four times [illegible]

On the Galicia[illegible] Russia, but the [illegible] latter is probably [illegible] the Stryna along which river [illegible] been much hard fighting [illegible] Winter especially during Brussilov's [illegible] 1915. The [illegible] or partly demolished and [illegible] thought was [illegible] town changed [illegible] the staff than a certain dirty [illegible] known as the "wild [illegible] of some kind of note the town said the [illegible]

Soon after [illegible] the chemin about [illegible] to the country [illegible] spot, but we ascertained [illegible] cases of typhus in the building which was at [illegible] Red Cross unit. This did not seem to [illegible] especially as the Russian authorities said [illegible] weeks to disinfect the premises and then would [illegible] of the [illegible]

However [illegible] to most of the available billets being already full of [illegible] very nice country house situated in beautiful [illegible] the village [illegible] Dniester and about fifteen versts from B— [illegible] particular army was situated.

But no sooner [illegible] establish itself in these

[illegible] and [illegible] had been changed, and [illegible] of the [illegible] to the north. According [illegible] headquarters established at K—— [illegible]

[illegible] was [illegible] operating along the same road [illegible] being [illegible] Hence it was arranged for Surgeon Maitland [illegible] to attached to a Russian field hospital at —— a place [illegible] for serving both groups of cars.

[illegible] arrival on the Galician Front it was obvious that the important [illegible] In comparison with the Roumanian Front, there was a [illegible] activity. Masses of troops were being held in readiness [illegible] number of the guns portended that here an offensive of considerable [illegible] was in contemplation as soon as the hour was ripe. Also there [illegible] greater animation in the city than we had ever seen in Roumania.

[illegible] hospital to which we were attached had pitched the camp in a pleasant [illegible] the nearest point of the front line being about five or six versts [illegible] It was not within enemy artillery range, but they mainly devoted [illegible] to the neighbourhood of the railway station which lay behind us [illegible] to the left, and consequently their shells passed well overhead. [illegible] occasionally in the form of fragments falling from shells from the Russian anti-aircraft batteries, but no one was ever hurt.

At this time it was almost a regular part of the day's happenings to see the [illegible] to strafe Russian "sausage" balloons, and one could not but admire the persistency in which they used to swoop down on these [illegible] shrapnel fire from all quarters.

During this time there was the usual considerable artillery activity on [illegible] We witnessed often typical example of how a very heavy bombardment [illegible] the production of amazingly little result. There was a Russian heavy [illegible] in a wood almost [illegible] from us, and evidently their fire must have been [illegible] It was considerable annoyance for one afternoon (after having carefully [illegible] the spot in terms of aeroplanes which had been hovering round [illegible]) they suddenly began plastering this particular corner of the [illegible] with. Two hundred shells were put in the space of a little [illegible] While the bombardment had hushed some of our men went over [illegible] The shells had evidently been placed with extraordinary [illegible] not to relate not a gun had been put out of action. Total [illegible] killed and an officer's tent destroyed. The guns crews had [illegible] that the station was going on and he had not sustained a single casualty.

On June [illegible] a bombardment began from the Russian batteries [illegible] It was really the artillery preparation for the long expected [illegible] began at last. This continued without much intermission for three days [illegible] Only [illegible] in our hospital in earnest as wounded began [illegible] in considerable numbers the infantry attack having opened. The [illegible] had to [illegible] small tent which Surgeon Scott and myself had [illegible] up as a permanent tent and we were busy without much intermission for [illegible] hours operating on some of the Russian wounded and also on [illegible] had been hit while manning some machine guns in [illegible]

[illegible] spell of [illegible] things eased down considerably and in a few days [illegible] than the offensive had on our sector of the front at any rate come [illegible] that the army to the south of us had made a [illegible]

[illegible] in the hospital having dwindled to a practically negligible quantity [illegible] of the dressings [illegible] demonstrated the difficulty of getting

[illegible] lky on to the [illegible] the [illegible] ation of [illegible] to the unit to [illegible] headquarters [illegible] m, and [illegible] little hospital [illegible] of the [illegible]

[illegible] this [illegible] the roads being [illegible] ambulances had [illegible] assistance [illegible] cases from the [illegible] near the front. The field hospital [illegible] which we were att[illegible] motor transport [illegible] horse carts [illegible] they had [illegible] which were [illegible] getting to places [illegible] to motor traffic.

[illegible] left for K—— [illegible] orders to [illegible] Nos. 1 and [illegible] Sp[illegible] [illegible] at L——

The hospital [illegible] the Tarnopol road but was [illegible] long. On [illegible] enemy long range gun [illegible] with [illegible] shot managed to set on [illegible] which fortunately [illegible] little [illegible] but [illegible] hospital had rather a warm [illegible] explosions which occurred [illegible]

[illegible] hospital site at [illegible] had been previously ordered [illegible] Nos. 1 and [illegible] quarter of a mile [illegible] letter from a health point [illegible] troublesome at our previous [illegible] supply of beautiful spring water [illegible] These are points not always [illegible] these Galician villages [illegible] is always preferable [illegible] supply not [illegible] [illegible] very [illegible] suddenly [illegible] sent first [illegible] the same [illegible] to the [illegible]

Nos. 1 and 2 S[illegible] ambulance were ordered to [illegible] Most of the [illegible] to L—— [illegible]

[illegible] seemed [illegible] to keep the line straight [illegible] to other [illegible] [illegible] had been broken and further [illegible]

[illegible] spidity [illegible] the [illegible] work.

On this [illegible] this war of trench[illegible] about 600 yards [illegible] open country [illegible] to support [illegible] that they were able to [illegible]

Some hours before the [illegible] party of sick and [illegible] M—— [illegible] place they were to be put [illegible] Red Cross [illegible] to [illegible] in Russian territory.

The [illegible] was not carried out without some [illegible] as on arrival at M—— the station commandant declared that all available accommodation on the train was already [illegible] and that our men could not be sent away until the next day but one. However, the persuasive efforts of one of the sick officers who

spoke [illegible] fitted up [illegible]

As [illegible] the train [illegible] was [illegible] about [illegible] shortage of [illegible] and that [illegible] the enemy [illegible]

On [illegible] received [illegible] — and [illegible] about [illegible] the [illegible] temporarily [illegible]

During the night [illegible] is it was [illegible] headquarters [illegible] road [illegible] The state of [illegible] — where two roads [illegible] letter being [illegible] It must have taken [illegible] complish the [illegible] the main street of the town

[illegible] passing through [illegible] Red Cross Hospitals were [illegible] patients being [illegible] of my colleagues was sent with our [illegible] and took an [illegible] masters working at a hospital [illegible] Russians were unable to [illegible] transport for them [illegible] as the Russian director of the hospital suddenly went off [illegible] literally was obliged to set on fire throughout the whole [illegible] more to our base in Russian territory

From our camp at a disused [illegible] the main road we viewed the spectacle of a large army in retreat [illegible] long there was a constant stream of transport of all kinds [illegible] was driven by twelve pairs of horses [illegible] Occasionally one saw pass a crowd of Austrian prisoners [illegible] hurried away from the fighting zone. Previous to the retreat [illegible] quite near the Front for road making and similar duties [illegible] have a very strenuous time. Probably the last thing [illegible] they wanted to do was to be recaptured and thus have to take up [illegible]

There were Turks also in a similar [illegible] Wounded [illegible] one who said they had fought against the English in the Dardanelles [illegible]

Soon the infantry began to form the [illegible] part of the traffic. In the towns and villages along the road [illegible] usually in the semi-town in the main street and sometimes the whole [illegible] would be held up while some luckless driver tried to force his way on some errand or another which required him to go against the stream

So sudden and rapid was the break through on the front of the army northward of more that within a few days it was evident that Southern Galicia must be evacuated and practically all the gains of three years of fighting given up. It was disheartening to see a fertile and pleasant country being left to fall into the enemy's hands. The crops were all ready to be cut and it is certain that there was no time for measures to be taken to render them useless to the enemy, so sudden had been the retreat

From our next temporary headquarters along the road I received orders to return to the main base in order to assist one of my colleagues at our hospital which had been established there. Consequently I was not a spectator of the subsequent stages of the retreat nor of the rearguard actions that our cars assisted in from time to time

The run to P—— was one of about 140 versts through very pleasant country

[illegible] magnificent one probably [illegible] had [illegible] leaving England [illegible] places [illegible] all the [illegible] possible to maintain a speed [illegible] for [illegible] unusual leisure for [illegible] plenty of work in [illegible] Russian [illegible] off in M[illegible] second [illegible] occupied [illegible] process of [illegible]

Th[illegible] very [illegible] officer [illegible] the whole of [illegible] to Engl[illegible] sick both [illegible]

At [illegible] obtain passa[illegible] inquiry [illegible] no further [illegible] would [illegible] their train [illegible] one could tell us how [illegible] likely to fare [illegible] a second class coach [illegible] to contain the [illegible] and attached a truck [illegible] we had our own little [illegible] hospital [illegible] good interpreter [illegible] attached in pa[illegible] part of the long journey [illegible] Ru[illegible] journey occupied about [illegible]

We arrived at Archangel on August [illegible] leaving in three days time [illegible] had been [illegible] receipt of telegrams from [illegible]

The voyage home was [illegible] None of us was sorry to get home [illegible] since leaving our winter quarters [illegible] disheartening and we felt that things could [illegible] worse [illegible] ment in the situation could occur [illegible] and for the moment the [illegible] of Russia [illegible] used by the Petrograd correspondent [illegible]

Clinical and Practical Notes.

[illegible] HANDLING THE CONTENTS OF BOMB DROPPED BY ENEMY AIRCRAFT

BY STAFF SURGEON A. C. NEWFORT, R.N.

[illegible] on erythemoid eruption on extremities followed handling of enemy [illegible]

[illegible] said on morning of tenth day after handling contents of [illegible] explosion [illegible] appearance of severe itching on backs of both hands

[illegible] examination showed [illegible] patches [illegible] dark circular [illegible] and slightly tender [illegible] over the dorsal of the hands [illegible] exhibited in these [illegible] similar in form projecting slightly [illegible] surrounding [illegible] a condition of generalized [illegible] nothing else [illegible] On the following day the [illegible] were larger and showed a [illegible] to run together [illegible] places fresh vesicles had formed

[illegible]

SOME [illegible] ACTION

[illegible]

[illegible]

[illegible]

[illegible] to publish

[illegible] FROM APPENDICULAR [illegible] SUCCESS [illegible] BY INTRAVENOUS INJECTIONS OF [illegible]

[illegible] DOUGLAS A. MITCHELL [illegible]

[illegible] R.M. was taken ill with appendicitis [illegible] of [illegible] Operation was performed forty eight hours later [illegible] pus. The whole right iliac fossa was found full of pus [illegible] appendix. The caecum also was becoming black around the [illegible] Drainage was effected with a tube and the rest of the [illegible] After a [illegible] period following the operation improvement continued [illegible] in offensiveness [illegible] copious discharge came away. The patient's condition was satisfactory [illegible] on October 1 the stitches were removed. [illegible] and freely and much discharge came away and on this condition he was transferred to the R.N. Hospital Malta on October 3. On admission [illegible] Temperature 104.1 F. pulse 84 respiration 20. The wound had completely lost the lower 3 in. and when the pus which poured from the [illegible] was sponged away the layers of the abdominal wall, the peritoneum and [illegible] the caecum were visible. The temperature [illegible] tissue improvement since the operation and the condition of the wound was stated to be improving under frequent [illegible] dressings. A small tube was laid in the superficial part of the wound and brought out through the dressings and through this tube Dakin's solution was syringed two hourly. The actual dressings being changed morning and evening. On October 5 (ulcer days after the operation) the patient had a severe haemorrhage from deep loss in the wound. As the haemorrhage ceased all on the dressings were removed the wound was simply re dressed and an injection of morphia given. An hour later the haemorrhage recurred and as pressure had completely failed the wound had to be thoroughly explored. The patient's condition was extremely bad and after a small amount of open ether anæsthetic he stopped breathing. Artificial respiration was performed and a pint and a half of saline given intravenously during

[illegible] commenced [illegible] untabl[illegible] volume [illegible] bloodi[illegible] [illegible] would be [illegible] close to [illegible] the minor [illegible] [illegible] terms of [illegible] move to 10 [illegible] [illegible] seeing his [illegible] the [illegible] He look[illegible] medical off[illegible] [illegible] have on [illegible] substan[illegible] into the medi[illegible] [illegible] patient [illegible] he [illegible] roughly [illegible] The patient [illegible] very much [illegible] 100 S [illegible] For three [illegible] commenced the [illegible] troublesome [illegible] spite [illegible] the wound [illegible] the toxemia [illegible] 103 or 104 [illegible] constitutional [illegible] [illegible] This [illegible] of [illegible] The result of this [illegible] although [illegible] elevation occurred. The [illegible] staunch [illegible] neck and the [illegible] rapidly. The [illegible] improved and the [illegible] weeks after [illegible] [illegible] occurred (not in all [illegible] major surgical [illegible] the summer) which seemed to be [illegible] connected with his [illegible] since. The wound healed completely [illegible] complicated [illegible] prolonged [illegible] by the [illegible] considerable [illegible] Recovery [illegible] eventually [illegible] the patient has [illegible] carrying on [illegible] normal [illegible]

A CASE OF JACKSONIAN EPILEPSY AND A CASE OF HYDROCEPHALUS INTERNUS

By [illegible] SURGEON MONTAGUE [illegible]
Royal Marines [illegible]

JACKSONIAN EPILEPSY

A [illegible] aged 32 M[illegible] On Septe[illegible] injured by the explosion of an enemy's bomb [illegible] on the [illegible] of [illegible] causing a lacerated and contused wound with exposure [illegible] evidence of fracture. He was given the [illegible] AT 7 [illegible] Calais where the wound was dressed by the [illegible]

Admitted [illegible] Royal Marine Infirmary Deal on [illegible] September [illegible] days after injury. He [illegible] was septic and at 9 [illegible] complete form [illegible] commencing in the right hand and [illegible] spreading to the right side [illegible] and then to

[illegible] and kept [illegible] the [illegible] Operation [illegible] ate and [illegible] was made [illegible] and dis[illegible] presented [illegible] large still taking [illegible] disposed [illegible] large pieces [illegible] removed [illegible] large bone [illegible] wound [illegible] Bone [illegible] The [illegible] also no [illegible] The wound [illegible] wound [illegible] However, the [illegible] days [illegible] The early [illegible] change in the [illegible] and the [illegible] With [illegible] months [illegible]

[illegible]

[illegible] felt [illegible] Occasional [illegible]

[illegible] May [illegible] 101 [illegible] for some [illegible] No vomiting [illegible] Constipation [illegible] temperature [illegible] balanced [illegible] 101 [illegible] types, and [illegible] twitching of the muscles [illegible] roused [illegible] Evidently pressure [illegible] extent and nature [illegible] performed [illegible] operation [illegible] hands and [illegible] temporal [illegible] presented [illegible] opened and [illegible] pressure and did not pulsate [illegible] forceps with blades [illegible] directly into the [illegible]

[illegible] ed. Dr [illegible] ha out
Flap s [illegible] shd
[illegible] removal [illegible]
[illegible] Wound [illegible] Pu
[illegible]
[illegible]
[illegible] The wa [illegible] valid u [illegible]

[illegible] catarrh, but in [illegible]
[illegible] headache, slow
[illegible] acquired hydro [illegible]
[illegible] and Burghard [illegible]
[illegible] this meningeal [illegible]
syphilis or [illegible] in posterior [illegible]
meningitis [illegible] the formation of [illegible]
the cerebro [illegible] by distension
is a pos [illegible] but syphilis was [illegible]
[illegible] was therefore [illegible] by [illegible]
[illegible] Mr. Kay [illegible]
Surgeon [illegible] who were responsible [illegible] notes [illegible]
[illegible]

SUTURE OF DIVIDED NERVES

BY PROFESSOR ARTHUR GASKELL, C.B., F.R.C.S., F.R.S.

Royal Naval Hospital, Greenwich

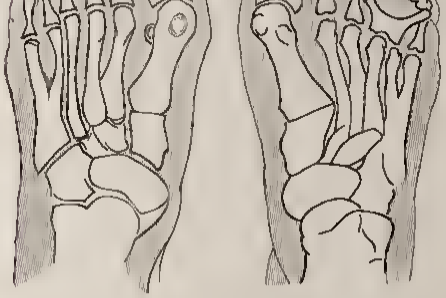
Sir [illegible] on General Cheatle's note on nerve [illegible] the Journal of [illegible] p. 30) I had a case of complete [illegible] [illegible] the elbow of about six weeks history [illegible] General Cheatle's method and it appeared to be excellent until I [illegible] suture this [illegible] The force required to pull the [illegible] caused the blood vessels to slip off the points of the [illegible] I would therefore suggest that in future after passing the needle [illegible] dog clip should be [illegible] the point end of each needle on the [illegible] lightly turn [illegible] round the needle in figure of eight [illegible] element.

[*Note.*—Sir [illegible] and Sir G. L. Cheatle's [illegible] quite sure that the [illegible] would not have been necessary [illegible] employed a fine needle in emphasized this original note [illegible] regarded as [illegible] The [illegible] sides that Elliot Smith's [illegible] be valuable where [illegible] long needles are not obtainable. [illegible] Arthur Sampson [illegible] adopted the method with [illegible] of tendons.—Ed.]

A CASE OF [illegible]

[illegible] BY SCREVEN [illegible]

This man was [illegible] before the War [illegible] the N[illegible]. He had [illegible] each foot. On [illegible] foot the [illegible] is doubl[illegible] natural size [illegible] was a distort[illegible] nail. [illegible] two [illegible] phalanges [illegible] with an infl[illegible] phalanx. The second [illegible] fourth [illegible] normal. [illegible] sixth metatarsals were [illegible] the bas[illegible] articulated with the [illegible]. The left extremities [illegible] fourth and fifth metatarsals articulate [illegible] proximal phalanx [illegible] bifurcated to articulate with the second [illegible] of the fourth and fifth [illegible]. The sixth metatarsal articulated with [illegible] phalanx.



LEFT FOOT RIGHT FOOT

Figures 9 and 10 X-ray Plates

On the left foot the metatarsals and phalanges were normal except that the fifth and sixth metatarsals were fused at their bases and articulated with the os cuboideum. This man had a small supernumerary finger removed from the ulnar side of the left hand when he was two years old; the resulting scar is still to be seen. On the right hand there is a small nodule of skin protruding from the ulnar side of the fifth metacarpo-phalangeal joint. A brother and sister have this peculiarity. A skiagram of both hands shows no abnormality of the bones.

He was the third of five boys; the fourth, aged 16, is also affected and has undergone several operations for his right foot, having had his big toe

[illegible]

[illegible] had a no[illegible] and the [illegible] ot and the [illegible] normal [illegible]

[illegible]

1st child	♂	[illegible]
2nd	♀	[illegible]
3rd	♀	[illegible]
4th	♂	[illegible]
5th	♀	[illegible]
6th	♂	[illegible]
7th	♂	[illegible]
8th	♀	[illegible]
9th	♂	[illegible]

(Although [illegible] indicated by dotted sign [illegible] outline.)

[illegible] or the presence of extra [illegible] and other vertebra[illegible] of the extremities [illegible] with other malformations [illegible] split hand [illegible] abnormalities of the hand [illegible] The type of deformity and [illegible] in the same family.

(2) [illegible] the following [illegible]

(1) [illegible] may be combined [illegible] attached [illegible]

(2) Bifurcations of no [illegible] with complete [illegible] of the part.

(3) [illegible] and [illegible] form.

The combination has been recognized by Albert [illegible] by Ahlfeld [illegible] is the sign of [illegible] a cleft in a [illegible] transmission is Morel [illegible] also described as [illegible]

There are four recorded cases of [illegible] These cases are [illegible] pointed out this view of the [illegible] either of the two hands [illegible] then both together represent [illegible] is known in all degrees of completeness from [illegible] melanomas and the [illegible] internal [illegible]

REFERENCES

[illegible]

[illegible] ON THE NORMAL [illegible]

[illegible] BY [illegible] MB RN

[illegible] as a preventive against th[illegible] to record the general [illegible]

[illegible] d by the medical and on[illegible] situation from ovum[illegible] mortality Besides the [illegible] inoculation of the ship. [illegible] vacci[illegible] after inoculating all contacts [illegible] those [illegible] eighty three men in all [illegible]

[illegible] of these c[illegible] [illegible] eighteen f[illegible] [illegible] eight (the reaction [illegible] [illegible]

[illegible] any case causing numbness [illegible] gradually increasing [illegible] and inflammation at site [illegible] from 100° to 104 [illegible] with [illegible] and very severe pain [illegible] The condition lasted [illegible] only extreme weakness [illegible] activities had a mech[illegible] with sordid tendencies [illegible] in two became [illegible]

[illegible] local pain and [illegible] however quickly [illegible] less severe general [illegible] marked

[illegible] oculate with [illegible] on board one of H M [illegible] one ship [illegible] inoculate the medical staff [illegible] by [illegible] instance were affected by being done first [illegible] one which has to be seen [illegible]

[illegible] SYMPTOMS OF CEREBROSPINAL MENINGITIS

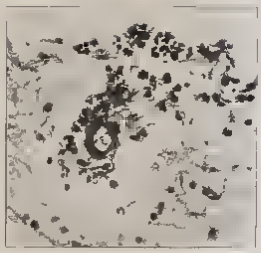
[illegible] BY WATRIN MB RN

[illegible] BY WILLIAMSON RN

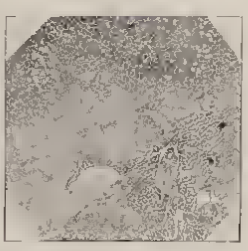
[illegible] *Ship [illegible]*

[illegible] on December 10 1917 This man [illegible] which came on during the after [illegible] sick bay at 9 p m on December 10 [illegible] the patient's ship) had noted [illegible] temperature 101 F pulse 96 No [illegible] His heart was enlarged and there [illegible] pulmonary and aortic areas

[illegible]



[illegible]



[illegible]

[illegible] Author's Address: [illegible] Surgeon of Cerebrospinal Meningitis [illegible] Surgeon [illegible] Surgeon [illegible] A. Williamson, R.N.

[illegible] with normal vesicular breathing all over. Pu[illegible] present. He complained of pain when [illegible] moderate rigidity of the cervical muscles. He [illegible] sign, but it was not considered to be present. [illegible] pulse 98, patient vomited and then brought up [illegible] like blood. At 6 p.m. temperature 102°·4, pulse 92. He was [illegible] vomiting [illegible] coffee ground in character; there was also [illegible] of fæces. He very strongly resented being moved and threw himself about when touched. He appeared conscious but could not answer questions. The limb were rigid. At 8 p.m. convulsions occurred. There was a history of convulsions in childhood and [illegible] in 1915.

On admission to H.M. hospital ship "Agadir," the man was unconscious moaning, and tossing himself about in bed with incontinence of urine and fæces; temperature 102°·4, pulse 70, respiration 30. The pupils were widely dilated with a sluggish light reaction; nystagmus was present, and slight convergent strabismus. The abdominal and cremasteric reflexes were not present but all tendon reflexes were exaggerated and ankle clonus was obtained. Frequent and wide-spread tetanic spasms affected the limbs, and during relaxation herding sign could not be obtained. The head could be flexed on the trunk, extreme flexion of the neck by spasmodic contraction of the neck and shoulder muscles.

There was no rash or herpes. The only abnormal physical sign in the chest was a harsh systolic murmur over the precordium. A lumbar puncture was performed and 30 c.c. of turbid blood stained fluid withdrawn, containing polymorphonuclear and large mononuclear cells in large numbers as well as an abundance of bacilli. The organism resembled *B. anthracis*, showed some filamentous forms and had a distinct capsule stained a faint pink by methylene blue.

Death occurred three hours after admission. A post mortem examination was made twelve hours after death. Rigor mortis was present. Post mortem lividity was confined to the posterior part of the body and there was no abnormal discoloration of the skin. On removing the calvarium some blood stained fluid escaped. The whole surface of the brain was engorged and a hemorrhagic exudate was present in the pia arachnoid, most marked in the left frontal and right parietal regions. The meningeal vessels at the base of the brain were not noticeably thickened and the injection was not so intense as on the vertex.

The lateral ventricles did not contain excess of fluid. Smears made from the exudate showed an abundance of bacilli.

On opening the abdominal cavity straw coloured fluid escaped and there was a collection of it in the pelvic cavity. The mesentery to the region of the ileo-cæcal junction showed gelatinous œdema and there was a general enlargement and injection of the mesenteric glands.

An ulcer was found in the cæcum about 1½ in. in extent situated 1 in. from and at the level of the ileo-cæcal valve. The base was thickened and dark red in colour with a bile stained slough adherent to it. The mucous membrane of the cæcum was ulcerated for a distance of about 1 in. above the ulcer.

The spleen was enlarged and soft. The heart showed no evidence of recent endocarditis but there was some thickening of the mitral valve.

In the substance of the base of the liver close to the anterior margin there was a round light-coloured lymph nodule about 1 in. in diameter which was fairly sharply differentiated from the normal liver tissue.

A growth of a Gram positive spore bearing bacillus which liquefied gelatine and resembled *B. anthracis* was obtained from the brain and spleen.

The case was an isolated one and the source of infection could not be traced.

Deputy Surgeon General P. W. Bassett Smith, C.B., F.R.C.S., R.N., kindly investigated it for pathogenicity and undertook a further examination of the morbid

[illegible]

Pathological [illegible]

[illegible] small cell infiltration [illegible] and congestion [illegible] the present [illegible] in dense masses [illegible] ation revealed [illegible] fatty degeneration [illegible] highly congested and [illegible] convolutions near the [illegible] intensely congested [illegible] tion. A large bacilli were very abundant [illegible] In the pia matter the vessels had the [illegible] plugged with masses of bacilli. Often the [illegible] small cells and bacilli occurring between the [illegible] Generally the capillaries with haemorrhagic [illegible] were [illegible] bacilli. Cultures from the case were found to be lethal in guinea pigs in eight hours and anthrax bacilli were again isolated from the animal. Photomicrographs of brain and liver are appended.

The information and specimens of a second case were kindly supplied by Staff Surgeon Burdett, R.N., who diagnosed it. The man was admitted suffering from acute frontal headache and tonsilitis, temperature 105° F. The symptoms suggested cerebro-spinal fever and lumbar puncture was performed but with negative results for meningococci. The cerebro-spinal fluid, however, was cloudy and contained a large number of anthrax bacilli. Blood smears also showed anthrax bacilli. In a smear from a pustule on the neck anthrax were also found. The man died the same day as admitted.

Cultures from the cerebro-spinal fluid were tested at Greenwich and found to be lethal to guinea pigs in forty-eight hours.

Post mortem.—The vessels of the surface of the brain were enormously congested, the whole surface being red. The brain was soft with numerous small haemorrhages in the substance of the cortex. A shaving brush was examined but no anthrax bacilli were present.

The occurrence of these two recent cases of anthrax, one of cutaneous and the other of intestinal origin, with symptoms suggesting meningitis, are of extreme interest, especially in relation to epidemics of cerebro-spinal fever. Few references to this condition can be found in current literature.

The marked selective action on the cortical and meningeal vessels of the brain was evident in both cases, while in the first intense fatty degeneration of the liver was found.

AN UNUSUAL CASE OF SYPHILITIC IRITIS

By Fleet Surgeon H. W. B. Shewell, M.A., M.B., B.C. Cantab., R.N.
and
Staff Surgeon C. Deverlux Marshall, F.R.C.S., R.N.V.R.

The following case presented some unusual symptoms of iritis, a disease which, though fairly common, is by no means always recognized in its early stages, and as will be seen it was entirely due to early treatment that the eye recovered in the way it did.

The patient, a gunner, R.M.A., came to the sick bay on August 13, 1916, complaining of a sore on the penis which had been contracted in Bombay early in June, roughly about eight or nine weeks previously. In addition to the sore he

[illegible] of the vertical [illegible] [illegible] comfortable for about [illegible] But there was left [illegible] the pupil which was [illegible] There was no trace [illegible] movement. The [illegible] of the case was at [illegible] hour or so after [illegible] so a few crystal [illegible] continued for [illegible] the eye was quiet [illegible] following day the pupil [illegible] is dilated. Sol. atropine [illegible] stilled long time. A large mass of [illegible] adhesion to the anterior lens capsule. The congest[illegible] and although pain was not acute at any time the [illegible]

[illegible] August 14 that is forty-eight hours after treatment had [illegible] large pseudo-hypopyon had become detached from the lens capsule [illegible] free [illegible] of the anterior chamber while the pupil was [illegible] On August 21 an ophthalmoscopic examination showed [illegible] of the vitreous was very hazy. The anterior lens capsule [illegible] but floating opacities were present and the retina [illegible] There was scarcely any redness of the eye and the cornea [illegible] sensitive. The following day atropine was discontinued. In the [illegible] the pupil had returned to its normal size and was quite active [illegible] allowed knowing well how sticky and [illegible] after the operation has settled and how easy it is for further synechiae [illegible] the eye. It was not quite an hour when it was found that the pupil [illegible] to its usual drop and its effect lasted for [illegible] the pupil [illegible] that there was nothing return in the way of inflammation [illegible] The cell was quite white and of normal appearance. The [illegible] was [illegible] and seven colt a trace of pigment [illegible] the lens capsule. There was [illegible] of further eye manifestations and the [illegible] tunes. The prognosis in this eye is as follows [illegible] The [illegible] stable pupil [illegible]

Although [illegible] kept in [illegible] almost entirely confined [illegible] not by any means the only syphilitic [illegible] had. He was [illegible] with acute inflammation of the [illegible] He suffered [illegible] and swelling of the knee joints and [illegible] had much pain [illegible] joints. Under [illegible] very well. The [illegible] cordial mixture very quickly [illegible] continued not [illegible] of [illegible] ointment was rubbed [illegible] and the same was applied [illegible] joints in the back [illegible] The pain in the joints was [illegible] of rheumatic [illegible] time the [illegible] was [illegible] school was given [illegible] This did not make any [illegible] after about a week it was [illegible] and 6 gr. of [illegible] again given. On September [illegible] his diet was changed to [illegible] not [illegible] 10 gr. and [illegible] was given some [illegible] During the [illegible] of this time his temperature varied from about 99° to 100° [illegible] seldom fell to the [illegible] but it was always up at night [illegible]

On September 12 a course of injections was commenced for twelve days and after that he was given [illegible] and [illegible] day

[illegible] ly [illegible] ight [illegible]
[illegible] w than [illegible] destructive
[illegible] the be [illegible] y differe
[illegible] ost tole [illegible]
[illegible] n, and [illegible]

[illegible] ciliary [illegible] and conj [illegible] the appearance of
[illegible] very obvious [illegible] is the redness [illegible] corneal zone and the vessels are [illegible] they can scarcely be distinguished [illegible] the cornea has almost the appearance of [illegible] If the two conditions are combined [illegible] the appearance of the cornea and aqueous [illegible] ight the aqueous clear and the iris of the sa [illegible] illated side, and if the pupil also is [illegible] However the cornea and aqueous [illegible] ddy looking, and of a different colour [illegible]

It is even more important [illegible] which if the case be at all acute [illegible] However it is seldom [illegible] described it is more often forced [illegible] ny glaucoma is always shallow the pupil [illegible] ness steamy In iritis the anterior [illegible] aqueous is turbid, and the cornea [illegible] constitutional or local cause, [illegible] more common in young people than [illegible] m 10 years of age, though there are exceptions [illegible] ness is by no means always cast

We may here say [illegible] met with. They may be divided into [illegible] the serous

(a) *Plastic Iritis* —[illegible] secretion of material from the iris [illegible] This material is very sticky and it [illegible] ke the iris adhere to the lens capsule [illegible] ll up the pupil [illegible] h condition known as blocked pupil [illegible] following, [illegible] d sympathetic ophthalmitis is of the [illegible]

(b) *Serous Iritis* —This is characterized [illegible] serous fluid into the anterior chamber causing it to be [illegible] Although posterior synechia (adhesion of iris to lens [illegible] y iritis) is much less tendency toward them and usually [illegible] recent does [illegible] This form is seen in all classes of so called [illegible] ll cases the iris following, [illegible] rheumatism [illegible] n toxic condition due to gastro intestinal sepsis [illegible] This form is very liable to recur whereas a plastic iritis [illegible] does se

In this patient in case the shot point of [illegible] xtremely violent plastic iritis inflammation which existed and which [illegible] ly with [illegible]

[illegible] and the [illegible] [illegible] [illegible]

[illegible] the [illegible] left [illegible] the p[illegible] [illegible] and [illegible] [illegible] gathering [illegible]

[illegible] to elucidate [illegible] of [illegible] teeth [illegible] The [illegible] were [illegible] for [illegible] [illegible] nothing [illegible] the left [illegible] was found that [illegible] [illegible] of the [illegible] demonstrated [illegible] patient [illegible] until [illegible] of the [illegible] slight degree of [illegible] and patient [illegible] of skin [illegible] light of the [illegible] case it would [illegible] mastoid operation [illegible] without delay [illegible] The [illegible] for the [illegible] on the [illegible] pressure [illegible] [illegible] and [illegible] by one of [illegible] and a pulse [illegible] than in [illegible] Patient [illegible] the skull trephined [illegible] the [illegible] was noted to be in [illegible] careful search of the tegmen tympani revealed [illegible] dislocation of the [illegible] fossa resulted in the [illegible] from the [illegible] lateral sinus. Owing to [illegible] and the possible danger of spreading the [illegible] was not incised. [illegible] was inserted into [illegible]

[illegible] the operation the patient's condition caused great anxiety, the [illegible] and the pulse 112. Improvement followed the intravenous [illegible] and there was a return of consciousness within eight [illegible] signs. It was decided that as soon as patient [illegible] a radical mastoid operation would have to be performed, [illegible] temperature having fallen to [illegible] and the pulse [illegible] patient was submitted to this operation. The whole of the mastoid [illegible] exposed by a prolongation downwards of the incision from the previous operation. The mastoid bone was chiselled away so as to expose the [illegible] and the vertical portion of the sigmoid sinus. A quantity of pus was found in the region of the latter vessel which however showed no evidence of thrombosis. The mucous membrane and the granulation tissue in the middle ear and antrum were scraped away and a drainage tube inserted down to the lowest part of the bony cavity. Patient stood the operation well but facial paralysis persisted and also the intermittent cephalalgia. Forty-eight hours later the patient became drowsy and developed retention of urine. The tongue and lips [illegible], the temperature subnormal and pulse rate 60, with occasional

[illegible] apparent that we had [illegible] cerebral [illegible] the skull was expos[illegible] [illegible] is absent. The dura [illegible] [illegible] into the middle of the [illegible] [illegible] oidal lobe [illegible] there escaped [illegible] [illegible] swelling [illegible] is passed [illegible] [illegible] extent of the [illegible] the anaesthetist [illegible] corneal [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] normal [illegible] lessons [illegible] was so [illegible] that unnece[illegible] or healthy [illegible] No perm[illegible] occurred [illegible] such a service [illegible]

[illegible] A STEAM ATOMI[illegible] ON BOARD SHIP

[illegible] MACKEOWN [illegible]

[illegible] at India.” It is fitted [illegible] third of this space [illegible] the central engine room [illegible] the bathroom.

[illegible] bulkhead [illegible] and projecting [illegible] the ship and [illegible] the steam pipe [illegible] controls the steam. The atomizer (Hime's [illegible] two straight [illegible] porthole aper[illegible] the short tap [illegible] is part of the [illegible] bottle containing [illegible] pints of [illegible] hot water [illegible] the solution [illegible]

[illegible]

[illegible] All [illegible] the ship for [illegible]

[illegible] the exhaust [illegible] straight [illegible] is closed and the canvas [illegible]

[illegible] apparatus [illegible] water [illegible] the steam [illegible]

The [illegible]

(a) All [illegible]

(b) [illegible] the bath [illegible] minute.

The [illegible] the bath [illegible] bolts

[illegible] beam [illegible] in position which [illegible] level of the [illegible] by six [illegible] When required for use the [illegible] only [illegible] the screen falls to within 12 in of the [illegible] space of the [illegible] is 2 630 cubic feet and the space [illegible] is less than [illegible] viz 840 cubic feet The bottle and [illegible] taken [illegible] the treatment is finished and a brass cap [illegible] aperture [illegible] when in use

The mode of working, the apparatus [illegible] efficient after several trials I had [illegible] began using it on January [illegible] 1918 [illegible] ly it up to February 28 [illegible] of them

It is advisable that the patient [illegible] the treatment [illegible] oilskin or other protective clothing [illegible] the bare [illegible] is that invented by Major [illegible] and supplied [illegible] through courtesy of the Medical [illegible] It is [illegible]

Reviews.

[illegible] Collection [illegible] KOVO [illegible] 1917 [illegible] With 35 illustrations.

[illegible] pioneer [illegible] to everyone [illegible] stone in the enduring success of [illegible] work has brought [illegible] instead of being a [illegible] Gollan [illegible] nephew of Lord Lister [illegible] comparing the old with the new surgery and [illegible] diseases [illegible] picture of the [illegible] in hospital. These hospital diseases—erysipelas [illegible] and gangrene and to a less extent tetanus—[illegible] so that in hospitals where twenty operations were [illegible] in the early sixties and in the [illegible] confined to the limbs amputations being [illegible] standards and sometimes in [illegible] mortality of 75 to 90 per cent. In those days [illegible] understood bacteria were recognized only [illegible] of the hands was supposed to come [illegible] like a blind Nemesis presided over the [illegible] of the time.

[illegible] friends Lister early had some trouble [illegible] as a Fellow of the Royal Society and [illegible] intention of becoming a surgeon. He [illegible] the next nine years at University College [illegible] house surgeon to Sir John Erichsen [illegible] well known as an authority on diseases [illegible] of his father Sharpey and Wharton [illegible] smooth and clear in the first and the shining [illegible] young consulting surgeon must to [illegible] both and then a long period. But his [illegible] the leading surgeon of Edinburgh [illegible] called to the Royal Infirmary there as [illegible] 1860. His reputation grew so rapidly that [illegible] Professor of Surgery and their [illegible] the infection of wounds. The [illegible] which the principles and practice of [illegible] not let him to impress on the [illegible] was an infinite capacity for taking [illegible] carbolic acid in a compound fracture [illegible] to prevent infection from the air but the [illegible] skin and caused sloughing, and from this [illegible] improvements were introduced as the result [illegible] event on his results began to attract [illegible] and changing phases of septicaemia [illegible] into its own. In the meanwhile [illegible] James Syme resigned the Professorship [illegible] from 1869 to 1877 Lister lectured there [illegible] large and enthusiastic following

[illegible] in order to [illegible]
[illegible] has been [illegible]
[illegible] s College Ho[illegible]
W Watson Chey[illegible]
[illegible] experience [illegible] rather
[illegible] s and the [illegible] is and
[illegible] examples shown [illegible] loaded
[illegible] by feigning [illegible]
[illegible] the letters and [illegible] with
the feeling [illegible] from
Sir Jocelyn Bell [illegible] record
account of [illegible] great knowledge [illegible]
and his biography will stand [illegible]

MALINGERING OR THE SIMULATION [illegible]
late Temporary Hon Lieut [illegible]
Senior Surgeon Cardigan [illegible]
Cardiganshire Medical Re[illegible]
Medical Referee under Work[illegible]
Friendly Societies, and [illegible]
Royal Mineral Water Hospital [illegible]
Hospital) Physician Officer [illegible]
Officer of Durham County [illegible]
relation to the Lyc By W M [illegible]
the Bath War Hospital [illegible]
xxiii + 708 With [illegible] Plates [illegible]

In view of recent legislation [illegible] malingering, and the desire of [illegible] at the present time of perfecting [illegible] and genuine disease Often the task [illegible] not only rarest the organic nature [illegible] more subtle problem in [illegible] simulated disease or disability The detection [illegible] of differential diagnosis and therefore the [illegible] He must be cautious taking no risks for [illegible] and to the patient nothing is more injurious [illegible] malingering

The authors attempt to formulate [illegible] malingering and have given us a book so [illegible] it may well become the standard English [illegible] with an interesting study of the historical [illegible] With regard to the influence of recent legislation [illegible] and Workmen s Compensation Acts [illegible] growth of malingering while the facility [illegible] the State or other public body receive [illegible] malingering it is thought to be due to [illegible] impulse an hypothesis suggested on biological [illegible] individuals most prone to malingering are the [illegible] neuropathic heritage Pure malingering [illegible] is relatively rare After dealing with the [illegible] various forms of malingering and the [illegible] formulation of a decision

Section II of Malingering in Relation to the [illegible] chapter on hysteria which elucidates that [illegible] ation of hysteria from simulation Subsequently [illegible]

[illegible] simulate [illegible] Section IV—on Malingering [illegible] responsibility of the sick [illegible] other medico-legal problems [illegible] infectious diseases, the section [illegible] joint diseases, the section [illegible] to estimate the measure [illegible] capacity following accident. In Section V [illegible] of Malingering [illegible] discuss the prophylactic [illegible] measures [illegible] with the growth of malingering [illegible] hy [illegible] between the State the [illegible] approved societies [illegible] insurance companies [illegible] look to naval and military [illegible] medical compensation or [illegible] institutions [illegible] subject [illegible] medical judgment and in [illegible] of reference

[illegible] Thomas [illegible] Robert Knox M D I dia [illegible] Consulting Dermatologist Great Northern [illegible] Physician King's College Hospital, [illegible] Medical Radiologist Cancer Department Cancer [illegible] A M C [illegible] the London General Hospital (in [illegible] Photography London A and C 18[illegible] [illegible] with 78 plates (one in colour) and 33[illegible] [illegible] net

The [illegible] appearance of a second edition [illegible] he said to be without doubt [illegible] subject in the British language. [illegible] added to the first edition [illegible] in to the dimensions of the [illegible] equate volume, and it is with [illegible]

[illegible] general principles, forms of [illegible] publication [illegible] of application and diagnosis [illegible] briefly described. Stereoscopic radiography is very [illegible] with the localisation of foreign bodies. For the [illegible] results from the intimate close co-operation between [illegible] occasion. The radiographer should aim at [illegible] the position in which it will be [illegible] illustration anatomical relationships [illegible] On the other hand the surgeon must see [illegible] position in which it was screened. Otherwise [illegible] of muscles due to difference in position, [illegible] rect line of direction may readily be caused with resulting fail[illegible] [illegible]ign body

[illegible] with Radiography in War Time and another gives the most [illegible] and radiographic appearance of gas in the tissues

[illegible] applied [illegible]

[illegible] nothing [illegible] the st[illegible]

A [illegible] Medical Practitioners. By [illegible] Medical officer [illegible] Medical Officer [illegible] Medical Officer [illegible] County [illegible] Medical Officer [illegible] Medical Association of Great [illegible] 1917. [illegible] Price [illegible]

This is an excellent book of psychiatry for [illegible] to assist practitioners and justices [illegible] diagnosis and treatment of the [illegible] in general practice and in medical [illegible] some notes on the general causes of [illegible] is then divided into two parts of [illegible] of diagnosis and delusional [illegible] treatment. With regard to the [illegible] personal experience [illegible] not published [illegible] analyses, but he has evidently [illegible] thoroughly to [illegible]

In describing the different types of [illegible] clearly brings each on to a [illegible] his tests and treatment and in nothing [illegible] of clarity he gives [illegible] alphabetical glossary of terms [illegible]

Part II is divided into three chapters [illegible] psychoses, shell shock, [illegible] One notes with interest [illegible] borderline psychoses are examples [illegible]

An important practical point [illegible] each which should be [illegible] of acute symptoms for [illegible] family to a command depot. [illegible] the cause of shell shock [illegible] influences for a considerable period [illegible] harmful and in spite of the [illegible] probable abuse of such [illegible] constrained to think that it may [illegible] method of treatment [illegible] carefully noted followed up and [illegible] arrived at.

It is a pity that the subject [illegible] and at Home, is not dealt with [illegible] writer will have an opportunity of [illegible] benefit of his work at a later date.

The book is interesting [illegible] for whom it is written.

A Text Book on Gonorrhœa [illegible] Late Assistant to the Urological Clinique Hospital [illegible] Member of the Faculté de Médecine Paris. Chief [illegible] Urological Centre at the Mitten Hospital [illegible]

[illegible]
Lord [illegible]
rot [illegible]
With [illegible]

Since the [illegible] knowledge and [illegible] German [illegible] of colour [illegible] rendered [illegible]

[illegible] book [illegible] ing to the [illegible] of Israel [illegible] shall [illegible] of his flesh [illegible] the law [illegible] common [illegible] of the most [illegible]

[illegible] of urethritis [illegible] the urethra [illegible] to urethra [illegible] should be [illegible] of the [illegible] long the [illegible] fully [illegible] that [illegible] once a [illegible] depends [illegible] of pus [illegible] individual [illegible] 8,000, and [illegible] the causal a bad [illegible] for the gonococcus [illegible] has [illegible] in consequence [illegible] massage of the [illegible] takes place which empties their contents [illegible] have a high opinion of the results obtained [illegible] modified by recent developments [illegible] successful treatment for the complications [illegible] the urethritis

The illustrations are numerous most [illegible] render the reader familiar with the various [illegible] endoscopic the coloured plates show [illegible] the urethra being particularly good The [illegible] published on the subject of gonorrhœa [illegible] are called upon to treat this class of case

MEMORANDA ON ARMY GENERAL HOSPITAL [illegible] Edited by P Mitchell M D Aberd [illegible] Officer commanding No 43 General Hospital [illegible] and Cox 1917 Pp vii + 109 Illustrations [illegible]

This book is mainly a criticism of the administration [illegible] equipment of military general hospitals the subject being [illegible] view to the possibility of improvement upon their present high standard of efficiency

Lieutenant Colonel [illegible] writes a [illegible] the officers, so ordin[illegible] military [illegible] war the nursing se[illegible] kitchens and cooks [illegible] and promot[illegible] of officers [illegible] civil life as spec[illegible] not by length of servic[illegible] by their fitness to perf[illegible] To avoid the waste of valuab[illegible] in allocating [illegible] local emergency committees [illegible] with the British M[illegible] decide the technical and physical fitness of all [illegible] puts forward a scheme [illegible] basis for such classification [illegible] service, he is of opinion that V A D nurses should repl[illegible] except those on duties required for special duties [illegible] nursing than men and that V A D s should be g[illegible] service as first year nurses and nurses with ove[illegible] tinctive badges and difference in pay (At present [illegible] increases of pay after each six months service, and [illegible] may be granted a good conduct badge)

Succeeding chapters on the Medical Division (by Major [illegible] the Surgical Division (by Major G H Duff) Camp [illegible] Richards) and Clerical Duties (by Hon Lieut[illegible] Taylor) complete a book which is interesting, and [illegible] attention The account of clerical work carried on by [illegible] the clinical duties of a hospital division is certain [illegible] their views as to how this can be obtained Medical officers [illegible] of our hospitals will agree that a reform in [illegible] administration is the reduction to a minimum of the [illegible] at present done by the officer responsible for clinical [illegible] of such clerical work should fall to an adequate clerical staff [illegible] of the administrator of the hospital thus permitting the clinical [illegible] his whole attention to medical surgical, or specialized duties

LABORATORY STUDIES IN TROPICAL MEDICINE By C W D[illegible] F R C P Lond Lecturer on Tropical Diseases at the [illegible] St George s Hospital London School of Medicine for W[illegible] Director of the London School of Tropical Medicine [illegible] Institute for Medical Research Federated Malay States [illegible] Newham M D Durh M R C P Lond M R C S Eng [illegible] D T M and H Camb, Director London School of Tropical Medicine [illegible] Fourth Edition London John Bale Sons and Danielsson [illegible] Pp xv + 560 With 164 illustrations 7 charts and [illegible] plates Price 21s net

The fact that this book has reached its fourth edition speaks [illegible] considerable demand and supplies a want This edition [illegible] alterations but it has been carefully revised and brought up to [illegible] necessitated the addition of twenty extra pages of which [illegible] Wassermann technique as carried out at the Albert Dock [illegible] pages and a detailed account of the Schistosomids the [illegible] been so much advanced by Leiper takes up another four pages [illegible] plate showing the mouth capsule of an ankylostome has been [illegible] chapter on blood examination and the test for haemoglobin [illegible] of Haldane s haemoglobinometer which is far superior to those [illegible]

THE VENEREAL DISEASES PROBLEM A book more especially for [illegible] midwives By J H Wilson, M D Edin London Baillière Tindall [illegible] Cox. 1917 Pp xii + 54 Price 2s 6d net

This small book of fifty four pages is intended especially for the use of [illegible] and midwives It is written in a simple style and gives an elementary [illegible]

the [illegible] their treatment and their effects on the health of the community.

Special [illegible] laid on the importance of the early diagnosis of syphilis and the pages [illegible] to ophthalmia neonatorum are well worth the careful attention of nurses [illegible]. The book is too elementary and lacking in detail to be [illegible] medical man but for the education of nurses and laymen it [illegible] in their easily understandable manner.

TRAVAUX [illegible] INTERNATIONAL OCEAN LE PANNE. Fascicule I, juillet 1917. Published under the direction of Dr. A. Depage. Editorial Secretaries: Dr. A. [illegible] Dr. G. Debaisieux. Paris: Masson et Cie, 120 Boulevard Saint Germain. London: H. K. Lewis and Co. Ltd. Price 15s. net (single number). Annual subscription 21s. (two numbers per annum).

Professor Depage and his colleagues of the Ambulance de l'Ocean, Le Panne, have undertaken to publish twice yearly, articles dealing with the clinical and scientific work in connection with the hospital, each part being of about three hundred pages. The whole of the publication will constitute a treatise in which observations on all questions of medical and surgical interest in time of war will be recorded. The specialization of each of the surgeons attached to the hospital, the existence of distinct departments for neurology, urology, laryngology, maxillary fractures, [illegible] of a laboratory of scientific research, enable scientific investigation of new methods of treatment and promise to elucidate obscure points in surgical [illegible].

The following is a summary of the contents of Part I, July 1917:—

[illegible] Department. The Hospital of Le Panne: G. Dehamoux. General Observations on the Treatment of War Wounds: C. Lagasse. Secondary Suture of Wounds treated by Carrel's Method: C. Jaessee. Cranio-encephalic Wounds by Projectile: [illegible]. Reduction and Mechanical Adjustment of Maxillary Fractures: [illegible]. Intravenous Injections of Peptone in Septicæmias of Intestinal Origin and in Severe Infections: A. P. Dustin. The Neurological Department of the Hospital: G. Dehamoux. Operative Technique in Peripheral Nerve Injuries: A. P. Dustin. Localized Isolonic Sclerosis of the Lower Limb: P. Goiris. The Prophylaxis and Treatment of Tetanus: E. Zinc. [illegible] on Blood Pressure in Gas Poisoning: P. J. Simonds. The Employment of Sutures: The treatment of Wounds infected by *Bacillus perfringens*. Effects of Oxygen on *B. perfringens*. Presence of *B. perfringens* in Recent Wounds. Examination of Helmets with a view to the Presence of Spores of Anaerobic Bacteria.

All the articles in Part I are of great practical value, embodying as they do the opinions of the distinguished staff of the hospital. They are well produced being printed on excellent paper and prettily and well illustrated. Medical officers of the Navy who have had the good fortune to serve at the front near La Panne will take a special interest in this publication as they know that the hospital there is second to none in organization and equipment.

We have just received Ambulances de l'Ocean *Part II*, December 1917, and find that in interest and excellence of production it fully equals the high standard set by the first number.

Abstracts and Translations.

Moore [illegible] The Causation and Prevention of Trinitrotoluene Poisoning. Medical Research Committee National Insurance Report Series 1917 No 11 p 80

The investigations contained in this report [illegible] August [illegible] jaundice among workers in trinitrotoluene had been occurring [illegible] As the symptoms of this poisoning more akin to those caused by [illegible] fumes of tetrachlorethane employed in varnishing the wings of [illegible] at first thought that the fumes or dust of trinitrotoluene were responsible and [illegible] this was the way in which the poison entered the body. But Dr B Moore [illegible] observations on workers in workshops and on himself and his experiments showed conclusively that the skin is the all important channel. If a person [illegible] TNT is inhibited on the hands and a person keeps out of the workshops so that inhalation is excluded the poison is found in the urine and symptoms are produced conversely if a person has the skin carefully protected from TNT and works in the workshop without a respirator very little TNT is found in the urine. Analyses of the air in the workshops for the microgram of TNT [illegible] worker could inhale during a shift showed that this is so [illegible] quantity is be incapable by itself of doing any harm. This observation has led the workers from the discomfort of wearing respirators. The workers were [illegible] provided with cotton gloves and their use made as far as possible compulsory. It was found that the powder passed through them and that the skin was [illegible] soft flushed and perspiring and therefore more permeable. All attempts to obtain impermeable gloves failed and eventually an impermeable casein varnish was applied to the skin of the hands and gave good results. The skin varies greatly in its permeability to TNT and in some persons the symptoms of poisoning may increase although removed from the works from the gradual unloading of the reservoir of TNT in the epidermis. There is thus a well marked idiosyncrasy in the incidence of TNT illness. Some persons with constant exposure month after month have never been ill while others have died after two months exposure only. It appears that pure TNT and not traces of impurities is the cause of toxic symptoms. The haemoglobin becomes converted into a [illegible] of NO-haemoglobin and met haemoglobin and thus oxygen death with its illness, tightening in the rib and chest giddiness drowsiness nausea abdominal pains and general malaise result. The blood has a venous blue colour the lips are ashen blue and the face a peculiar pallor or grey blueness which simulates but is not anaemia there is thus a characteristic facies. When the cyanosis appears the worker should be sent away at once to prevent the occurrence of jaundice. When to the slighter cases of cyanosis the patient is not kept in bed fresh air with moderate exercise is desirable and if a cyanosis patient is allowed to return to work a careful watch must be kept and a recurrence led to permanent disablement. Dr Moore regards both toxic jaundice and aplastic anaemia as secondary results of the same action of the poison as that which causes the symptoms of cyanosis. When even slight jaundice appears the patient should be treated in a hospital all traces of TNT removed by solvents such as acetone or ether from the skin and hair every stitch of clothing removed and the given the patient put to bed in an airy room the bowels kept open the urine and cutaneous excretions stimulated fresh vegetables and fruit and alkalis given as there is acidosis in some cases. No one who has once had toxic jaundice is in any one instances to be allowed to return to work on TNT. One reason for insisting on hospital rather than home treatment is that the homes of workers

often become contaminated [illegible] continued [illegible] although the patient has [illegible] Dr Moore was at [illegible] ferral supported of the prophylactic [illegible] induction of labour. [illegible] events have made him change his [illegible] because he does not [illegible] that alternation is good for the [illegible] but he has to use there are objections to it from the point of view of the [illegible] and from the national [illegible] economy in footpoint and because [illegible] other means by which the [illegible] can be [illegible] with equal certainty [illegible] much less cost in every way H D R

Schmidt (H B) The [illegible] Intravenous Injections on the Blood pressure of Febrile Patients [illegible] Chicago, 1917 vol xix pp 1059 1061

Although intramuscular injection of pituitary extracts into animals is usually followed by a considerable [illegible] in blood pressure no comparable results have been observed after injection in the ordinary doses in man Deep intramuscular injections of 1 to 1 [illegible] of pituitin (P D and Co) were made in fifteen febrile patients and [illegible] followed fifteen minutes later by a more sustained and smaller [illegible] the systolic pressure was not altered in any [illegible] or striking manner But in the great majority of cases the diastolic pressure taken by the auscultatory method rose fifteen or more millimetres of mercury corresponding in time with the pulse alterations and reaching its maximum thirty to forty five minutes after the injection H D R

Petersen (W F) Serum Changes following Protein Shock Therapy *Arch Int Med* Chicago 1917 vol xx pp 716 724

This subject has been dealt with in some thirty papers by Inhing, Petersen and others under various titles such as 'The Non specific Factors in the Treatment of Disease' or 'The Influence of Non specific Substances on Infectious' which do not appear to have attracted much attention in this country The results are remarkable and not a little bewildering for though it is rather difficult why in typhoid fever an intravenous injection of typhoid vaccine should be followed by a fall of temperature and immediate recovery as far as the general toxic symptoms and fever are concerned it is surprising to hear that the same results follow the intravenous injection of typhoid vaccine in paratyphoid fever of *Bacillus coli* vaccine and also of deuteroalbumose in typhoid fever of typhoid vaccine in acute rheumatic arthritis and of anti meningococcic serum in gonococcic arthritis and ophthalmia That these successes are not occasional coincidences is shown by the long lists of cases treated thus Miller and Luck treated 15 cases of acute arthritis with typhoid vaccine with prompt recovery after one to four injections in 29 well marked improvement in 8 moderate improvement in 6 and no improvement in 2 quite recently Cecil (*Arch Int Med*, 1917, xx, 951 963) treated 40 cases of acute arthritis 13 cases of acute rheumatism rapidly recovered without salicylates after intravenous injections of typhoid vaccine (one injection in 8 cases, two injections in 4 cases three injections in 1 case) 20 cases (17 of rheumatic fever) received salicylates as well and all but 3 showed improvement 7 cases of gonococcic arthritis showed gradual improvement under vaccines (3 cases had gonococcic vaccine only 2 typhoid vaccine only, and 2 both), but the author says it is impossible to decide how far the vaccines were responsible There is, therefore considerable evidence that vaccines when injected intravenously, so as to give rise to a severe and immediate reaction with rigor, a rise of 1° to 4° F followed several hours later by a progressive fall and profuse perspiration may induce an extremely favourable change in diseases entirely unrelated to the bacteria or the vaccine In most instances the improvement is roughly in proportion to the reaction In such cases in which the

[illegible] of the [illegible] hence [illegible] therapy [illegible] paralysis [illegible] to the [illegible] after an [illegible] that [illegible] increased [illegible] the [illegible] case increased [illegible] the [illegible] that the [illegible] do not depend on any single [illegible] but the leucocytosis fever [illegible] and increased lymph [illegible] the [illegible] duct play a part, to add [illegible] the important [illegible] changes [illegible]

Opie (E. L.) The Focal Minority Tuberculosis [illegible] *Johns Hopkins Med. Bulletin* [illegible] vol. xxi [illegible]

This investigation based on the post mortem examination [illegible] ninety three children leads to the important conclusion that the healing tuberculous lesions found in the lungs of [illegible] least 92 per cent of all adults but [illegible] the progressive pulmonary tuberculosis of childhood [illegible] identical with the pulmonary tuberculosis of infancy [illegible] tends to occur in the middle lobe of the right lung [illegible] of the upper lobe in the left lung and is not [illegible] clean here in the lungs. This pulmonary lesion [illegible] tuberculosis of the regional lymphatic glands [illegible] freshly infected animal. In adults on the other [illegible] forms of tuberculous lesions in the lungs [illegible] recognized which tends to extend diffusely into the lung [illegible] calcification or calcification of the regional lymphatic glands [illegible] may become healed (ii) local or identical with [illegible] childhood by which almost all human beings are [illegible] tuberculosis before they reach adult life. When both [illegible] special appears to be a second infection. [illegible]

Baer (W. S.) Sacro iliac Strain. *Bull. Johns Hopkins Hosp.* [illegible] vol. xxviii 159 163.

This common but often overlooked condition is [illegible] rheumatism or sciatica. Most cases of lumbago are due to [illegible] impossible for the removal of many appendices. The sacro iliac joint with a definite amount of motion and frequently sustains strains [illegible] The cases fall into two distinct classes according to the sacrum tilting backwards or forwards.

Class A in which the sacrum tilts backwards is the more important from the severity of the symptoms. These are pain in the lumbar and gluteal regions running down the sciatic nerve in the thigh to [illegible] tenderness on pressure just to the side and below the umbilicus. The sacro iliac pain easily confused with McBurney's point—Kernig's sign and in hysterical cases elevation of the spine to the side opposite to the affected joint. This strain is due to a blow or fall on the sacrum or to muscular exertion in lifting heavy weights in a stooping position. Athletes or pseudo athletes as golf players often strain this joint in the swing of the body which follows a drive. Tennis players and

[illegible] to back [illegible] ner the [illegible] greatest [illegible] chronic [illegible] by these [illegible] elevation [illegible] flexed [illegible] spasm [illegible] the [illegible] hollow [illegible] The patients [illegible] complain of lumbar and [illegible] tired feeling [illegible] debility and visceroptosis [illegible] factors abdominal supports, massage and exercises [illegible] H. D. R.

[illegible] of Symptoms from Lesions of the Prostate and Deep Urethra [illegible] 1917, vol. iii, pp. 389-392.

[illegible] that disease of the prostate and adjacent structures [illegible] local manifestations may take pyorrhœa be[illegible] An infective focus in the prostate or seminal [illegible] may be responsible for myocarditis, [illegible] but [illegible] is effected pains imitating renal colic [illegible] addition prostatic disease may cause a general [illegible] frequent symptom being anxiety. Sometimes there is [illegible] distress and even angina pain. MacCrae [illegible] or whether there is perhaps an internal secretion [illegible] which causes widespread disturbance of the [illegible] consultant was once described as [illegible] The prognosis, as the circumstances of the case [illegible] inflammation. The frequency and importance of [illegible] cure symptoms render the second duty [illegible] H. D. R.

[illegible] A Report of 112 Cases of Cerebrospinal [illegible] Washington, 1917, vol. ix, [illegible]

The [illegible] March 1917 but it was not until April that the disease [illegible] All the cases were confirmed by bacteriological [illegible] spinal fluid. The authors do not support [illegible] is spread by flies. Among those 112 naval cases [illegible] measles and cight maps. Blood cultures [illegible] were positive. An interesting case [illegible] sick bath attendant with dread of [illegible] occurs in a true case is quoted. The mortality [illegible] serum made at the Rockefeller Institute from [illegible] doses of 20 to 40 c.c. every twelve hours for [illegible] only that doses not only until the cerebrospinal fluid [illegible] but for several days longer or until there is [illegible] improvement. Lumbar puncture is continued daily until the fluid is

[illegible] pressure [illegible] eclipses and [illegible] on the sixty [illegible] [illegible] recommend [illegible] in public [illegible] eclipse

[illegible] that among [illegible] was 33 per cent [illegible] normal saline solution [illegible] proportion of saline solution [illegible] [illegible]

LATON (W. [illegible]) [illegible] Matches employed in the [illegible] Washington, 1917 vol ix p 510

Five [illegible] developed [illegible] dermatitis corresponding in [illegible] contained [illegible] safety matches [illegible] removal of the matches [illegible] the garment [illegible] application of [illegible] lotion the skin eruption [illegible] but in three instances [illegible] matches were again carried [illegible] In one case dermatitis of the [illegible] the hand and inflammation of the [illegible] the same side of the body as the [illegible] were attributed to [illegible] matches and rubbing of the [illegible] hand [illegible] matches now on the market [illegible] dissolved by the [illegible] conveyed to the skin [illegible]

MOULENIER Des Injections [illegible] Solution [illegible] préparée et non [illegible] pp 335 340

While admitting that some [illegible] not [illegible] quinine Moulenier believes that these [illegible] finish [illegible] quinine instead of [illegible] alters the power of [illegible] quinine in [illegible] distilled water [illegible] 0 25 to 0 75 gm daily into the [illegible] three two days As a result [illegible] in the [illegible] three days and in 100 such injections [illegible] suppuration or necrosis [illegible] generally speaking useless Freshly prepared and [illegible] injections [illegible] effective than the solutions [illegible] ampoules in [illegible] useless [illegible]

PRAT BIOTARD ET VIOLLE (H.) [illegible] quinique (e doses et [illegible] quiniques) [illegible] Paris 1917 tome [illegible] 31

This account is [illegible] of the cases following injection of quinine observed at Salonica [illegible] abscesses after hypodermic injections of quinine but [illegible] the immediate [illegible] to the tissue [illegible] concentrated solutions [illegible] the same part of the body [illegible] generally received about ten injections of bichlorhydrate of quinine [illegible] combined with methylene blue [illegible] long exhibited potted of fifteen days and indurated area appeared [illegible] within three or four days [illegible] and tenderness developed [illegible] with [illegible] necrosis without any pus and without any remains of the injection [illegible] Subsequently the fibrous tissues softened the muscles [illegible] and suppuration due to the exogenous or endogenous advent of [illegible] streptococci staphylococci or

[illegible] supervened [illegible] red leucocytes [illegible] blood [illegible] [illegible] fillibe fit are formed [illegible] the abscess [illegible] There is no [illegible] [illegible] The prognosis regards life [illegible] The best treatment [illegible] and deep incisions [illegible] to remove all the necrotic tissue as [illegible] [illegible] of pus from the [illegible] cavities H D R

[illegible] Malarial Dysentery at Blessures de Guerre [illegible] *Bull. et mém. de la Soc. de chir. de Paris*, [illegible] pp 321 326

The [illegible] has drawn attention to the great influence that malarial infections have upon the [illegible] of surgical cases in this war Many men returning from the East develop attacks which are often mistaken for septic pyrexias He made a systematic [illegible] of his cases, *controlled by blood examinations* Both tertian and subtertian [illegible] were found the latter being slightly more common He divides the cases under the following heads (1) Injuries stimulating an outbreak in those already malarial (2) Injuries inducing an attack in a case so far latent [illegible] The intensity of the malarial symptoms are largely influenced by the severity of the wound but a small operation such as opening an abscess may be followed in three by an attack or recurrence and this may even happen after complete obliteration It is stated that the interval between the wound and the onset of the fever varied between two weeks and a month in cases previously immune but it may be considerably shorter in others In those cases clinically malarial in which no parasites could be demonstrated he found the relative blood counts gave very little diagnostic help in cases without suppuration a polycythemia increase may be found

It has been stated that a malarial infection produces a change which gives rise to a condition subject to grave secondary hemorrhages The author considers this to be an exaggerated view as he did not find hemorrhages more common in these than in non malarial cases but in connection with this is the interesting fact that in malarial surgical cases are peculiarly affected by chloroform

The practical application of the results of these investigations is to recognize that malaria whether latent or precedes tends to delay cicatrization of wounds union of fractures &c and that therefore quinine should be given to all patients received from malarial regions more especially if they have had previous attacks and that systematic blood examinations should be made in all cases of pyrexia

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EXTRACTS FROM THE ANNUAL REPORT OF THE SURGEON GENERAL U S NAVY FOR THE FISCAL YEAR 1917

Aviation

The problems of aviation have naturally received deep thought and been made the subject of much painstaking investigation by this bureau, which is intimately concerned with them through its obligation to determine a standard of fitness for candidates for the corps A great many points have to be considered as for example the weight to be given to evidence of practical experience and efficiency in aviation work on the part of applicants who have physical defects which should a priori, exclude them

It is clear of course that in the time of war and when a large number of flyers are needed and are to be used for the necessities of the moment the requirements are not those which the Government must hold to in peace times when it relies entirely on officers and crew whose training in various naval activities gives them a distinct value in other lines of work as well—when it is desired to elaborate the naval branch of aviation and study the requirements of

time field, and to work out a relation for the practical [illegible] themselves especially in regard to the [illegible] of making [illegible] and methods of communication with the ship or the [illegible]

The bureau has kept in close touch with the [illegible] stations and experiments being conducted with a view to obtaining [illegible] and concise method of testing the psychic factors [illegible] common that come into play with flying and the physical [illegible] terminal.

Experiments and observations are also being [illegible] specialists in Washington Surgeon G. B. Fuller [illegible] interested studying the question of fitness for aviation [illegible]

Division of Sanitation

The sanitary problems constantly arising in connection with the administration of the Medical Department of the Navy have so increased in number, importance and perplexity in recent years that it has become necessary to create in the bureau a special division to handle this work. Until this year sanitary problems while studied and discussed by the whole bureau staff were usually referred to the officer in charge of publications because that officer was able, through the large number of exchanges, medical publications, sanitary bulletins &c. received by him to keep in touch with developments on these lines. Latterly the publications of this bureau have increased to the point where they occupy one man's entire time. Past Assistant Surgeon J. R. Phelps United States Navy, has been placed in charge of this Division assisted by the necessary clerical force and has associated with him at present Surgeons Hugh S. Cumming and Carroll Fox of the United States Public Health Service.

Fifteen other officers of the United States Public Health Service are working at various points in collaboration with the naval medical officers. The essential function of this division is to consider all matters pertaining to naval sanitation and hygiene. With this end in view the division labours to keep in touch with health conditions ashore both here and abroad so that with the development of epidemics in any part of the country danger to the enlisted personnel of the Navy may be at once apprehended and measures taken to prevent the spread of contagion to our ships and stations. Not a day passes but what some scheme or device is suggested by civilians or military men bearing on the health of the Navy and requests for information, requests for guidance, come in from all sources, often requiring extended study and research. These are all turned over to the division of sanitation for investigation and settlement.

One of the first steps of this division after it was organized was to get closer touch with ships, stations and hospitals and arrange to have full and immediate information regarding epidemic and infectious diseases. It was felt that the quarterly and monthly reports, though accurately prepared and promptly forwarded, did not suffice to give the bureau timely information on such a vital matter. Voluntary telegrams and personal letters from the medical officers of the service might or might not come to the bureau with the detailed information desired and the all important time element in dealing with such incidents was not sufficiently considered. Since July 1 it has become mandatory for the medical officer of every hospital ship and station to forward one copy of the form 1 card as soon as it can be released by filling in the line that shows the disposition of the case such as "discharged", "transferred", "invalided" from the Service, "died" or any other disposition. By this simple method, which entails upon the hospital nothing more than the making of a duplicate, the daily reports come in from all stations. Ships and stations more than twenty four hours distant from Washington are to telegraph their reports if they have unusual interest.

On receipt of these cards by the division of sanitation they are sorted, classified

and tabulated. The [illegible] fusion which seeks to [illegible] conditions, such [illegible] recording prevail locally [illegible] elsewhere with [illegible] and action has been established [illegible] recruits drafts, patients [illegible] Virginia [illegible] Sanitary Statistics hang in the office of the Division of Sanitation and by the [illegible] pin for each epidemic disease stuck upon proper place on the [illegible] possible to have at a glance a picture of the [illegible] health of the [illegible] to note the increase of sickness in one [illegible] distribution [illegible]

Sanitary Measures and Conditions Afloat

Improved equipment of the medical department of ships. Adequate provision for the handling and treatment of the injured in battle and improvement of battle dressing stations continues to be a subject of earnest effort for the bureau. The plan of abandoning the sick bay and adjacent space in battle in favour of sites previously selected protected by the ship's armour and having more or less permanent installment of lockers for surgical dressings available running water &c. is the basis for all elaboration in this regard. The U.S.S. "Pennsylvania" has and other ships of this type about to be commissioned or building will have, a complete portable sterilizing outfit by which dressings utensils instruments and water can be sterilized by electricity at the respective battle dressing stations. Sterile dressings will be in metal containers stored in metal stands which can be carried from place to place as occasion requires. For ships of the older type whose sterilizing outfits in the operating room are immovable and require steam ample supplies of surgical dressings will be prepared in advance of the disembarking of the sick bay &c. when going into action and sterile dressings in metal containers will be carried to battle dressing-stations in the movable stands referred to. In all battleships the permanent installation of metal lockers at battle dressing stations behind armour has been recommended and largely carried out and reserve stores of dressings have been generously provided. Passages, ladders hatches which are to remain open and give the readiest access to the battle dressing stations are now indicated by painted red cross and black arrow so that men even those who have joined the ship most recently and are least familiar with the intricacies of its structure will have no difficulty in finding their way to posts of surgeons. Hereafter and beginning with battleship No. 13 vessels in that class will have installed auxiliary electric lighting circuits for operating room and battle dressing stations so as to insure as far as possible adequate illumination of these important places and the casualties of battle. The designs for the sick bay dispensary, &c. of battleships 49 and 51 are based on this idea, that the dispensary will be used at sea for the compounding and dispensing of drugs and for the clerical work done by the chief pharmacist's mate.

The sick bay will be for the occupation of the sick and maintained as nearly as possible like a ward in a hospital all useless thoroughfare being shut off and that quiet and orderly atmosphere maintained so indispensable to the comfort of the sick, the efficient performance of duty by hospital corpsmen detailed for their care and the accurate and painstaking obedience to orders on the part of the Hospital Corps so difficult to enforce where the sick bay proper is used for the examination of drafts of men, for vaccinating and for the handling of accident cases. By reducing somewhat the dimensions of sick bay and dispensary the space assigned for the doctor's office was increased so as to yield a compartment of ample size to permit daily sick call to be held there.

It is intended that all accident cases shall be examined and minor surgical dressings done there. It will also be the place for examining and vaccinating drafts of men and for giving instruction to the Hospital Corps, and there will still be ample room for microscopic and bacteriological work, lavatories and

encouraged by the use of the incubators now installed on the [illegible] available for issue to cruising ships. Among the important [illegible] supply table are the following: Cabot steel sponges, sheet [illegible] splints, rough towelling, material for cleaning purposes and [illegible] rubber) bandages. Provision has been made for furnishing all [illegible] ample supply of a suitable paraffin preparation to the treatment [illegible] has been issued also, a chemical substance which permits the [illegible] preparation of the invaluable Dakin fluid for use in infected wounds. [illegible] antitoxin has also been supplied and ample stores of the other [illegible] antitoxins, and sera are available for distribution. Bacteriological [illegible] have been found for argyrol, protargol, ichthyol and other expensive imp[illegible]

A standard pattern has been adopted for the shell wound or [illegible] dressing designed for first-aid use by officers and men during an [illegible] Other dressings are now being prepared by uniform patterns which will [illegible] simplify and accelerate the work.

Chatin (M. A.), Médecin Major de 1re classe. La Réeducation des Mutilés Cultivateurs. Paris: Académie d'Agriculture de France. (*Compte rendu de la séance du 3 mai 1917*).

THE REEDUCATION CENTRE AT LYONS.

Sixty to seventy per cent. of the mutilated men are engaged in agriculture. The main idea of the Centre is to restore the patient to his original occupation and country, and this is quite realizable in the field of agriculture. The [illegible] economic advantages are easy to understand and are not simple [illegible] show. Of 1,214 cases under notice at the Centre, 98 [illegible]

Agriculture and Labour by those who [illegible] [illegible] that the difficulties, reduced to a minimum as regards all the [illegible] tated are at a maximum in those with the thigh amputated, where [illegible] stump is short. The retraining of those amputated near the thigh [illegible] at the hospital continues with advantage when on their own horse. [illegible] the patient recalls discouraged in the face of work which [illegible] and does not rouse any immediate interest. On the contrary, on [illegible] convalescent leave with a temporary wooden stump he is [illegible] family and his old interest in the work to which he [illegible] is renewed.

The investigation of the results among the men returned to the Centre to repair to their appliances shows us:—

(1) That the greater number have gone to the legs or even [illegible] when back at their homes resume labour on the land.

(2) That the wooden stump is the appliance which adapts [illegible] on the land, that it is lightest and most practical, and [illegible] is good for agricultural labour, that a ride quille [illegible] is of great advantage.

None the less work in the fields is hard enough [illegible] a lower limb, particularly the thigh, the amputation of which [illegible] flexion of the body difficult in bending. Strike-off [illegible] sloping fields is very hard for the same reason [illegible] necessary step forward which can only be made in the [illegible] We have sought to remedy these difficulties in the use of [illegible] handle and with double curve in the form of a S. [illegible] the use of similar scythes allows the mower to remain upright and to lose almost without bending. Secondly by the use of an inverted scythe a left scythe when the right leg is amputated. The difficulty will often be to get the patient to adopt

[illegible] but it [illegible] is [illegible] walking on [illegible] with [illegible] premises the [illegible] this evidently is [illegible] the [illegible] plough [illegible] it is reduced by the [illegible] Brahm [illegible] and the [illegible] plough for [illegible] lower [illegible] could then be in the [illegible] sound [illegible] work is impossible if it is [illegible] more [illegible] difficulty it is [illegible] have [illegible] The number of men returning [illegible] for [illegible] demonstrates that these difficulties [illegible] [illegible]

[illegible] *Men with upper Limbs amputated*.—For men [illegible] in these cases the work is perhaps [illegible] [illegible] Even in cases of disarticulation of the [illegible] consider the work possible to a certain [illegible]

[illegible] *Implements and Instruments of Work*.—Work is rendered [illegible] appliances working arms to aluminium by Gillet [illegible] carriers capable of being applied to all kinds of labour [illegible] Our success is due to these latter the '*cultivateur*' [illegible] used for short handled implements and the '*agri*' [illegible] for long handled implements These implements [illegible] fine hands

The [illegible] is also given We consider it indispensable for carpenters [illegible] man must know in order to keep his implements in repair

(*B*) [illegible] *Work for Spade Bark* Plain spade or spade with [illegible] is one of the easiest and healthiest forms of training [illegible] to sorts of implement carrier the Cardine appliance being [illegible] work than the one on the revolving ring

Spade [illegible] spite of the apparent difficulty, is one of those resumed [illegible] help of the implement carrier with revolving ring fixed to the [illegible] Men with right upper limb amputated will use to [illegible] scythe a bit as the They quickly learn to work left [illegible] Sharpening and flattening the scythe remain important difficulties [illegible] which is absolutely necessary for the man to be capable of doing [illegible] sharpening with a stone is practised rather with the scythe fixed upright [illegible] middle or on the contrary laid on the ground with the handle above resting [illegible] manner in which the man is trained Flattening [illegible] lines [illegible] the strap but thanks to the 'Lumière' pincers all our [illegible] is such child in long this by using either a flat anvil with convex [illegible] and rub flat hammer, whichever best suited them

Harrow [illegible] *Horse Hoe Plough*.—It appears to us useful in [illegible] all [illegible] work is [illegible] of them have to use ploughs of an old type the [illegible] (and Canadian) do not entail the same necessity [illegible] amputated the work is easy it is obviously [illegible] difficult the [illegible] is amputated We use in both cases the implement [illegible] Canadian with the new Julien carrier with revolving ring bound [illegible] work [illegible] by sufficiently long shaft with a Julien anti vibrator [illegible] the vibrations conveyed to the stump The [illegible] work with a team of one or two horses A team of [illegible] is an [illegible] of its slowness and steadiness

[illegible].—This work thanks above all to the Julien implement [illegible] with revolving ring is rendered very easy for men with the upper limb [illegible] loading principle overheard is done with the greatest ease and [illegible] of dead centre

[illegible] The [illegible]

[illegible] —This [illegible] above all [illegible] Here [illegible]

When [illegible] —[illegible] or with [illegible] or with [illegible] to the [illegible] The [illegible] strain on the stump or on the [illegible] responding [illegible] can be considerable It is better [illegible] which spreads the weight over the [illegible]

Necessary Carpentry —We [illegible] should be learnt for the upkeep of [illegible] This is taught to all our men in the [illegible] sional carpenter A very man with [illegible] able thanks to the "Lamure" [illegible] his sharpen his saw and he is [illegible] touch them to make the slight [illegible] pincers such as adjunction of [illegible] gorge on the handle of the [illegible]

Agricultural Work by Men with Amputations of Upper Stump

Short Stump and with Deadness [illegible] stumps would appear to make work on the land difficult [illegible] is no stump, as in cases of disarticulation [illegible] is not so at all We have seen [illegible] made at the Centre on the work of [illegible] unexpected We found fifteen men with [illegible] on the external lines) commencing their work in spite of the difficulty [illegible] given taken a farm on his own account [illegible] reports came from a man with the shortest stump of the shoulder [illegible] engaged in agricultural labour [illegible] the help of the Lamure pincers

These workers will obviously not [illegible] from a shortage of labour but it is a consolation to them [illegible] useful example to their comrades less [illegible]

Agricultural Work by Men with both Hands Amputated —The same [illegible] guides us and we believe we are [illegible] allowance which would appear obligatory [illegible] examples One of our pupils Private B [illegible] by profession, one of eleven children is about to return home He [illegible] to dress and undress alone to do his toilet [illegible] drink, and to write without too much difficulty but in addition [illegible] uses a pickaxe, digs and moves without any help Two other [illegible] trained in the same way A teacher is suitably [illegible] his class Besides doing all the necessaries of ordinary life he [illegible] easily and draws on a blackboard A field to which as he [illegible] property in an agricultural centre [illegible] to us on his own [illegible] work on the land He has been quite successful and uses two [illegible] that he invented for his special case and which we now utilize [illegible] A farmer had both forearms amputated, and was given a very [illegible] at the Centre quite at the commencement of the War He has [illegible] property, which he continues to manage utilizes his equipment [illegible] can mow and reap, using the machines and driving a team of two horses

Agricultural Work by the Maimed affected with Grave Disability of the Hand —Some of the maimed presenting a radial paralysis or an ankylosis of the wrist are more disabled than those who have suffered amputation Their inform to

[illegible]

[illegible] mutilated [illegible] held the [illegible] to show [illegible] at the same [illegible] judging [illegible] must take into [illegible] the short duration of the [illegible] the short [illegible] tion On the other hand the competitors [illegible] nomination [illegible] recent weakness and lack of training

Solid [illegible] The [illegible] seen with our own eyes proofs of the possibility [illegible] prolonged [illegible] work In 1916 four men with amputation of the upper limb (two [illegible] one of the right forearm) have mown [illegible] about 34 [illegible] three tons of hay in three days working [illegible] hours and a half [illegible] In 1917 nine of our maimed men undertook for the [illegible] of [illegible] to [illegible] an expense of nearly 10 acres The team consisted [illegible] amputation of the fore arm three of the arm and three other [illegible] hemiplegia with complete disability of the limbs working [illegible] sheath fitted with a Julian implement carrier the same as the [illegible] Including the days of bad weather the work was accomplished [illegible] time The most energetic of the workers [illegible] working hours

Market Gardening [illegible] *Kitchen Garden at the Hospital by Patients with Amputations* —The garden comprising about 8400 square yards of ground, was cleared ploughed and worked over with a spade, and then sown and cultivated naturally by men with amputations from the Centre, or by their comrades equally seriously maimed It produced a satisfactory yield, and the profits (amounting to about £[illegible] from July to November) were divided pro rata (according to the working hours) amongst the eighty two men who had cultivated it

Helping by the Day —From the auxiliary hospital men having an upper or lower limb amputated worked for the day in gardens of the neighbourhood, only returning in the evening having earned a wage which is the best proof of their capacity to return to work The monthly reports give us a return of 100 to 150 days and from [illegible] to 100 half days

Health of Men with Amputations during Convalescent Leave — As we have mentioned in form men with the lower limb amputated easily take up their work again This is not the case with men with the upper limb amputated the readaptation must be made at the hospital otherwise the appliance insufficiently tried and ill adapted with a stump which is not trained, runs a strong risk of being discarded

Results of Agricultural Training after Leaving the Centre — At the beginning the work evidently required a great effort and much courage We now have a series of letters asking for repairs to the artificial arms and the implement carriers a tangible proof that the maimed men have definitely taken up their work again Lastly we have the daily report at the Centre of the number of men who come to ask for repairs to one of their appliances

By correspondence 335 results known 109 continue farming 26 give up 144 patients interrogated when calling at the Centre for repairs 122 continue farming 12 give up

In addition to these satisfactory figures the investigations gave us the happy surprise of seeing men with the thigh amputated who had left the hospital very certain to their future now quite reassured and definitely settled down in agricultural career Amongst the men some had been back only a few months others a year a year and a half and two years

Return to the Land of Maimed Men not Farmers requisite Training for Employment —An interesting and reviving fact is the return to work on the land of those men who rightly believe themselves more capable of doing this

work than any other. We have therefore trained [illegible] men who had caused them to abandon their original occupations [illegible] various trades—bakers, butchers, locksmiths, &c., of whom [illegible] had suffered amputation of the upper limb, four amputation [illegible] upper limb and four amputation of a lower limb.

Return to the Land of Manual Men of other Occupations [illegible] Employment at Home.—A temporary postman was sent to us with an [illegible] amputated having an artificial arm of ordinary type which however he did [illegible] use. Provided with our appliances he returned home happy to be able to [illegible] gardening work whilst continuing his occupation of postman, which [illegible] the subsequently discarded. He now devotes himself to gardening, [illegible] for his father's jobbing in the day elsewhere. He has since sent us [illegible] of his comrades who have taken up work on the land with our appliances and [illegible] our services.

Agricultural Instruction.—This has not been [illegible] and comprises theoretical lectures and practical demonstrations. [illegible] average are required for the equipment of the men and to establish [illegible] records. This time as a rule suffices for their [illegible] knowledge. Unfortunately does not allow us to add much to the [illegible] knowledge. The landed proprietor or farmer more readily returns to the land [illegible] being to find himself at home again. He cares little about a school of agriculture which would keep him away long months, however much it would be to his profit. The agricultural labourer with a limb amputated, who has to find a place for [illegible] rightly the difficult conditions of the future and often renounces work on the land. These reasons explain the relatively low manual men who take advantage of these schools which appear likely to be more useful in the [illegible] less gifted maimed men whom the lectures of horticulture and physiotherapy relieve.

The Use of Agricultural Machines by the Maimed.—The question arises to what extent machines can be used by the maimed, what modifications are necessary to facilitate their use and how they can be of helpful regard to the injuries.

The Employment of Machines for Mowing, Harvesting and Hay making.—After trials with teams of one or two horses we reached the following conclusions. For men having a lower limb amputated obviously the mowing and hay making machines can be of great use, the difficulties being slight when it is the left leg, but considerably greater in the case of the right. The chief difficulty appears to be the defective position of the manœuvrings at [illegible] uncomfortable by the rigid wooden stump stretched in front, he throws his body backwards and so upsets his balance. This is easily remedied by the [illegible] of M. Dor especially made for this purpose.

For maimed men with the right lower limb amputated the use of the mowing machine of which the scythe lever and the [illegible] are on the right appears at first sight impossible. These men must therefore use a left hand directing. M. Dor tells us these machines are in existence and at Nantes all the surrounding neighbourhood are used exclusively.

The man with left upper limb amputated finds his lever on the right with the sound hand. His whole difficulty is to drive his team of one or two horses with the right hand. The same difficulty exists for the man with right upper limb amputated and in addition he has to use an inverted machine with the scythe and lever on the left. To remedy this difficulty of driving and working a lever with the same hand M. Dor has constructed for us an extremely simple system by which a special back can be adjusted to any seat and which has no pommels in the ordinary mowing machines.

As regards the use of the mowing machine the question of the team is very important. A team of oxen is always easier than one of horses. On the other hand Private B—, with both lower arms amputated, assured us that he used a

machine [illegible] by two [illegible] [illegible] [illegible] [illegible] almost [illegible] applicable to any making of harvesting machines

Use of a weapon for long [illegible] It can be used also [illegible] change [illegible] with either lower or upper limb amputated Here [illegible] of oxen offers difficulties than one of horses We have seen [illegible] machine transformed into a reaping machine It would be necessary in cases of men amputated on the right side to have left handed scythe and lever the same as on an ordinary machine

Notwithstanding all these difficulties the fact remains that these agricultural machines can be and are used by men unarmed even without the alterations which appear to us at first sight necessary One of our men with the right thigh amputated impeded in addition by a stiffness of the right hand, assured us that he had mown with a machine with right hand scythe by working the lever on the right with his left hand and using the treadle on the right with his left foot A man with right arm amputated was able to use his mowing machine driving his team of two horses and working his lever with his left arm only

News of the Service.

BIRTH

[illegible]

HONOURS AWARDED

[illegible]

[illegible] Distinguished Service [illegible]

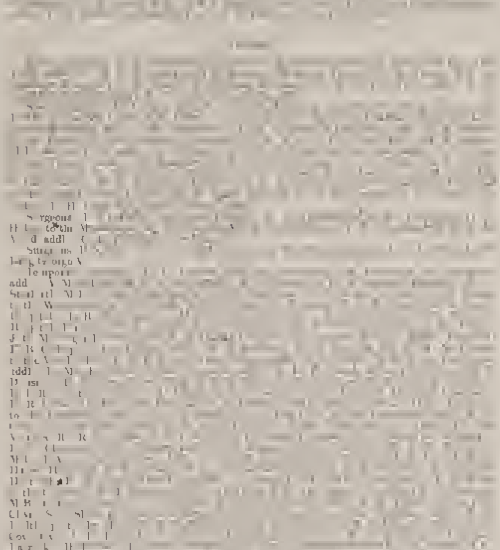
[illegible]

[illegible] and March 8, 1918

[illegible]

PROMOTIONS.

APPOINTMENTS



[illegible]

[illegible]

Temporary Surgeons J C Dobson M B in the [illegible] to the Rhodes Station J A D Skinner to the Leinster addl [illegible] addl J B Bush to the Britannia H Bowan to the Hesperus A J [illegible] Donagal I R Orr M D D S O M C to the Europa [illegible] to Plymouth Hospital C H Lane to Chatham Hospital [illegible] Hospital J S Ellis to Chatham Hospital [illegible] addl [illegible] to the Orion R Hack to the Pambroke addl J T [illegible] to the Victory addl [illegible] to the Victory addl H [illegible] Thorn M B [illegible] Pantiers [illegible] W O F Dorchester Plymouth Hospital F C H Maxwell to the Gladiator [illegible] Williams Walker to the Shackle Mon Base E I Deacon to the Boston D M [illegible] H G Marshall J G Walker M B to No 2 Wing R N A S S H Mills to the [illegible] addl G J M Kenigan to the Vivid addl [illegible] T O Shepherd to the Magnificent [illegible] M B D T H to the Vivid addl W T Beswick to the Valiant [illegible] Todd M B [illegible] the Victory addl C D Mun R C S to the Fire [illegible] F G Watson to the Falling W E M Gollan F R C S to the Pambroke addl [illegible] L H M B to the Agincourt [illegible] M B to the Vivid addl L G Higgins to the Revenge H [illegible] Ramsden [illegible] a G H C St [illegible] to Haslar Hospital [illegible] J Kilham M B to Mercury [illegible] addl C M Fraser to the Pambroke addl [illegible] M B [illegible] the Thunderer R H Ford to Plymouth Naval Depot J A Mayne M B to Acorn Hospital [illegible] Warren M R C to the Vivid addl R St A Hamilton M B M A [illegible] to the Victory T J Haynes to the City of London F G Hind M B to the Mallow W E M [illegible] to St R C S [illegible] the Scorpion [illegible] Wm Winnicke to Chatham Hospital D R [illegible] M B to Highland Station B L Hall M B to the Victory addl P Ward to the Cleopatra A J Marsh M B to the Spiteful R T P Widenoth to H [illegible] addl J R Lawrie to the Superb C W Hawes addl Seagull T R H Ralf to the Pambroke addl J H Sergeant M B to the Victory addl H F Tottenham to the Victory addl J Dodd M B [illegible] the Vivid addl T A Hadfield M B to the Thunderer S Hutchinson to the Spanker A R Matheson M B to the M [illegible] [illegible] M B to H M Depot Dock R B Adams [illegible] Wag R N A S J D Dymock M B [illegible] H Gallant M B to the Tilthouse T R [illegible] M B to the Pekin R W [illegible] M B to the Vivid addl T F Reason to the Beswick T F Llewellyn to the Falmouth W [illegible] to Haslar Hospital E A Cockey M B [illegible] to Haslar Hospital [illegible] S Bain to Hospital Yacht Liberty H Willis to the Minerva [illegible] to Dreadnought the Lord Nelson J [illegible] M B to the Princess R F H [illegible] to the Victory addl R H [illegible] M B [illegible] the Conqueror J M Harrison to Haslar Hospital addl J A Stirling to the Star W C Wyll M B to the Victory addl H [illegible] Lawson M B F R C S to Hospital St Margaret of Scotland H P Thorne M B to Chatham Hospital J Matheson M B to the Vivid addl T A Gibb to St Margaret of Scotland [illegible] D Hall to the Hannibal A T McDonald to the Victory addl C J L Blair to the Victory addl

NAVAL MEDICAL COMPASSIONATE FUND

Account of Receipts and Payments for year ending December 31, 1917.

	£	s	d	£	s	d
Balance at Bank on January 1, 1917						
Deposit Account	300	0	0			
Current Account	216	14	3			
				516	14	3
Dividends on Consols	265	0	0			
Interest on War Stock	12	6	3			
				2	6	3
Interest on Deposit Account				9	1	11
Donations				2	2	0
Subscriptions				111	6	11
				£915	9	6

	£	s	d
Awards to Orphans and Widows	130	0	[illegible]
Secretary's Allowance	23	1	[illegible]
Auditor's Fee	3	3	0
Brokers' Fees for transferring Stock to the names of new Trustees	0	16	3
Messenger's Allowance	1	0	[illegible]
Cheque Book	0	4	3
Amounts invested in —			
5 per cent. War Loan Stock 1929-1947 £485 0 0			
5 per cent. National War Bond 1927 400 0 0			
	885	0	[illegible]
Balance at Bank on December 31, 1917			
Current Account 107 [illegible]			
Deposit Account Nil			
	107	[illegible]	[illegible]
	£915	9	6

[illegible] the above Cash Balance to be [illegible] to the following investments with standing, at the close of the year, to the credit of the Account at the Bank of England in the names of the Trustees:

£1,000 2½ per cent. Consols
£500 5 per cent. War Loan Stock 1929-1947
£400 5 per cent. National War Bond 1927

[illegible] only [illegible] the estimated market price

(Sd.) D. McNABB, *Deputy Surgeon General R.N.*
Hon. Treasurer.

[illegible] Medical [illegible] to the [illegible] —

[illegible] Surgeon General [illegible] Widows [illegible] £130 was distributed among the following applicants:

[illegible] Surgeon [illegible] Widows [illegible] £130 was distributed among the following applicants:

[illegible] Surgeon [illegible] Widows [illegible] £130 was distributed among the following applicants

ADMIRALTY ORDERS ISSUED FROM DECEMBER 1, 1917, TO MARCH 1 1918

(Only the more important Orders [illegible] the duties of Medical Officers [illegible] confidential are included.)

4210.—Medical Examination prior to Discharge on Demobilization

(N. [illegible]—23.11.1917.)

[illegible]

4503.—Officers found Unfit for Further Service—Reports of Surveys (Form M. 38)

(C.W. [illegible]—30.11.1917.)

[illegible]

10.—Drafts from Trawler Bases—Medical Examination

(T.S. [illegible]—1.1.18.)

[illegible]

78.—Distinction Marks for Wounded

(N.L. [illegible]—10.1.1918.)

[illegible]

399.—Medical History Sheets—Disposal

(N. [illegible]—30.1.1918.)

[illegible]

[illegible]

163.—Medical Students Serving in the Navy—Release

(C.W. 2284 [illegible])

[illegible] medical students [illegible] R.N. [illegible] the following who have passed [illegible] should be [illegible]

164.—Tropical Uniform Allowance: Temporary Chaplains and Temporary Surgeons

(N.P. 8199/17 [illegible] 1918.)

Surgeons and Chaplains entered for temporary service [illegible] tropical (white) uniform [illegible]

(1) Payment may be made to all Officers [illegible] without prior Admiralty approval [illegible]

(2) [illegible] Officers of the R.N. [illegible] tropical uniform [illegible]

305.—Medical Transport Office, Hull: Change of Address

(M.D. 893/16 [illegible] 1918.)

The address of the Medical Transport Office, Hull, has been changed to
Hull Medical Transport Office, [illegible] Buildings, Market Place, Hull.
Telegrams: Medtrans, Hull.
Telephone: [illegible]

*328.—R.N. Auxiliary Hospital, [illegible]

(M.D. [illegible] 1918.)

[illegible] Hospital [illegible]

The [illegible] R.N. Auxiliary Hospital [illegible]

The [illegible] R.N. Hospital at [illegible]

*334.—Temporary Surgeons: Transfer to Permanent List

(C.W. [illegible] 1.1918.)

It is directed that Commanding Officers [illegible] Temporary Surgeons [illegible] permanent list [illegible]

(1) [illegible]

(2) [illegible]

(3) [illegible]

(4) [illegible] permanent [illegible]

401.—Dental Stores—Return by Surgeon Probationers

(M.D. 3170/17 [illegible] 1918.)

Surgeon Probationers who have been supplied with Dental Stores [illegible] be returned.

***756.—Principal Medical Transport Officer**

(M.D. 1686/18.—14.2.1918.)

The Principal Medical Transport Officer is established in the Medical Department, Charles Street, Berkeley Square, W.1.

Telegrams: Medicaun, Mayfair, London.

Telephone: Mayfair 1881, Extension 1.

***796.—Vaccination—Inspection of Cases**

(N./M.D. 24186/17.—28.2.1918.)

A Medical Officer is expected to see each case of vaccinia daily in order to [illegible] the appearance of the vesicles until the scab falls off.

(This order will be included in the April M.O.s.)

***796a.—Drafts—Medical Examination**

(N.L. II. 6571.—4.1.1917.)

In addition to the usual medical examination to which men are liable [illegible] drafted from a Depot, the drafts should be immediately before leaving the Depot [illegible] again to be inspected by a Medical Officer with a view to detecting any [illegible] which may appear on the face and neck or hands and wrists.

779.—Temporary Surgeons: Notice of Discharge

(C.W.—7.3.1918.)

The Regulation under which Temporary Surgeons are to receive two [illegible] notice of their discharge, no longer required, is not applicable in the case [illegible] demobilised.

(This order will be included in the April M.O.)

809.—Weekly Report of Health

(M.D.C. 9766/18.—7.4.1918.)

In future the numbers of *fresh* cases of venereal disease admitted to the sick lists during the week ending are to be included in Weekly Report of Health (M.O. 66 R). The numbers are to be given under the separate headings of chancroid, syphilis primary, syphilis secondary, acquired gonorrhœa. (If there are no cases, a note to be so stated and should be observed that the number of [illegible] forms, the week are required only.)

(This order will be included in the April M.O.s.)

(*Note.*—It is intended to issue at an early date the Order 809 Weekly Report of Health [illegible] the word "gonorrhœa" has been inadvertently omitted.—Ed.)

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EDITED BY

FLEET SURGEON W L MARTIN, F R C S I R N

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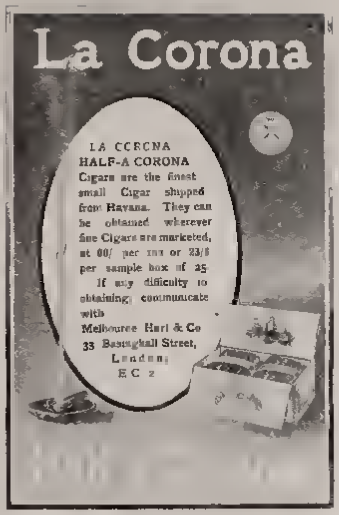

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VOLUME IV. [illegible] No. 1

Journal of the Royal Naval Medical Service.

Original Articles.

LAMINECTOMY FOR SPINAL INJURIES.

By Temporary Surgeon (Special A) EDMUNDS, C.B., F.R.C.S., R.N.
Fleet Surgeon M. L. B. FOULDS, R.N.
and
Fleet Surgeon J. D. HALAHAN, F.R.C.S., R.N.

Two cases of laminectomy for spinal injury have recently occurred in the Royal Navy which we consider might be placed on record. In view of the interest of the subject we have ventured to add a few notes on the living, on views. The cases are as follows.

A trawler hand, aged 33, was admitted to the Royal Naval Sick Quarters at Shotley on September 5, 1917. The trawler on which he was working was blown up and he was admitted to the hospital three weeks. There was complete motor and sensory paralysis of the lower extremities. Although he stated that when he was in the water he was able to move his legs. He was seen in consultation about three weeks later, when two bed sores had formed. There was a certain amount of cystitis, and the motor loss was as before. Sensation to touch and pain were quite lost, but there was a slight amount of vague sensibility to deep pressure—that is to say, his muscle sense had not completely gone. Control of the sphincters was lost, the bowels could only be moved by enemata and faeces were passed unconsciously. Pressure over the bladder produced no sensation.

On September 21 laminectomy was performed by Fleet Surgeon Halahan, R.N. It was decided to operate on the ground that there was some portion of the cord intact, inasmuch as there was a slight amount of deep muscle sense present, and he had at one time been able to move his legs. There was a possibility that the paralysis might have been partly due to pressure from blood clot. This, as will be seen later, was not the case. Bed sores were present. But this was not held to be a contra indication to operation.

A flap was turned aside, and the spinous processes of the eighth, ninth, tenth and eleventh dorsal vertebrae were removed. The laminae of the tenth dorsal vertebra were found to be obliquely fractured and were removed together with the laminae of the vertebrae above and below.

[illegible] September 20 the condition was as follows [illegible] had healed up, [illegible] anæsthesia from the umbilicus to the [illegible] had much improved [illegible] sense had returned practically everywhere in the legs. Yet he was quite [illegible] to pain. There was no improvement in the motor paralysis of the legs [illegible] were absent also cremasteric reflex [illegible] reflex. He was [illegible] to deep pressure over the bladder and other [illegible] himself by that means he could sometimes feel the urine passing along the urethra. Never wetted the bed except sometimes during sleep. Still had cystitis unless the bladder was washed out. He was very constipated [illegible] however sometimes by oil and knew beforehand when to expect the bowel. Enemata had to be used before this case he got on pretty well [illegible] had to remain on the bedpan until motions were finished. He was conscious of faeces actually passing.

Unfortunately the patient developed an ascending infection of the urinary tract from which he has since died.

Several points of interest bearing on the treatment of this case are illustrated. In the first place although the result was not brilliant yet his condition was enormously improved. Instead of passing his urine and faeces involuntarily he was able to ask for assistance and so his life was not only more tolerable but he could be kept clean, and his bed-sores healed. Had he survived this small amount of control of the sphincters would have been an enormous boon even though he never walked again. Another point is that although bed-sores were present no septic complications occurred in the wound. The orthodox teaching is that laminectomy should never be performed in the presence of bed-sores and we attribute our success in this case in avoiding sepsis to the fact that the full Listerian technique was adopted that is to say that the skin was disinfected with Lister's strong mixture (1 in 20 carbolic containing 1/500 of mercury [illegible] prepared by dissolving two soloids of mercury in a pint of 1 in 20 carbolic) and the dressings afterwards consisted of cyanide [illegible] the mercurial elements of which has been washed out in 1 in 40 [illegible].

The faeces were covered up during the course of the operation with [illegible] soaked with perchloride of mercury 1 in 2000 the skin was disinfected [illegible] then the ordinary operation towels were arranged as usual. [illegible] of this technique which yielded such brilliant results, has largely [illegible] in conference with the introduction of the apparently simpler [illegible] which has in its turn been largely superseded by picric acid [illegible] extremely popular but it is just cases such as the present which show the value of the older methods.

The second case is that of a Bombardier R M A aged 27. On July 25 owing to the explosion of an enemy shell he was thrown into the air and fell on his back debris falling on him. He was evacuated from Trieste for (1) superficial [illegible] (2) fracture of right tarsus (3) contusion of back with a note that he had not passed urine since the accident and that a catheter had to be used. He was admitted to the Royal Marine Infirmary on July 27. Temperature [illegible] July 28 temperature normal pulse 80. There was bruising and swelling in the dorsal and lumbar region with a break in the continuity of the spine

[illegible] the accident [illegible] and not [illegible] now. No loss of [illegible] legs. [illegible] pain in the back [illegible] injury to [illegible]

[illegible] T [illegible] P $\frac{80}{61}$ [illegible] ult

[illegible] Time [illegible] [illegible] [illegible] fixed [illegible] [illegible]

[illegible] Bowels [illegible]

[illegible] Movement [illegible] Still pain [illegible] back. [illegible] who [illegible] with the [illegible] operated as follows: patient on left [illegible] Reflecting the muscles [illegible] vertebra. The muscles were [illegible] part of the vertebra. The left [illegible] The damaged [illegible] cleared. The [illegible] removed [illegible] the loose [illegible] wound. [illegible]

July 31. T [illegible] P $\frac{[illegible]}{100}$ [illegible] pain. Redressed and tube mopped [illegible] soaked with blood. Catheter passed [illegible]

August 1. T $\frac{100.2}{99.1}$ P $\frac{65}{100}$ [illegible] dressed and drainage tube removed—no [illegible]

August 3. T $\frac{100}{91}$ P [illegible] [illegible] cystotomy performed and bladder [illegible] method [illegible] Colt's drainage [illegible] The stitches were removed on the tenth day [illegible] lower angle. This however soon completely [illegible] Bladder washed out and tube removed and replaced [illegible] with [illegible] leg soon commenced to return [illegible] free and normal. He had some [illegible] temperature 104° [illegible] until pulse [illegible] and washing out bladder. The [illegible] specific gravity 1025, albumen, phosphates [illegible] He had [illegible] temperature [illegible] pulse 100 [illegible] Numerous [illegible] uneventful recovery [illegible] had to be [illegible] December 1 and [illegible]

bladder was washed out daily with ½ per cent argent nit Irrigations dressing was left off on December 22 and dressing of sphagnum moss used over suprapubic wound During healing this wound was touched with argent nit The suprapubic wound had healed on January 8 1918 and patient voided urine normally He was treated throughout with light and liberal diet, first with stimulants and tonic He was allowed up for the first time on December 7 in a chair and was walking by December 31 He was discharged to Chelsworth Convalescent Home on January 16 walking well passing urine normally and with complete control of the rectum At first the patient was most cheerful and excellent in every way towards the end however he was somewhat neurasthenic and used to imagine his bowels would not be opened without injections These however were refused and he was made to go to the lavatory the result being always satisfactory

There are few more difficult problems in surgery than the treatment of spinal injuries The results of expectant treatment are poor the results of operative treatment very often disappointing although occasionally brilliant

During 1917, an Inter Allied Medical Conference was held at which among other matters wounds of the spinal cord were discussed, and the conclusions arrived at may be summed up as follows The first thing to do is to treat shock and to deal with the wound on ordinary surgical lines Later on the cases fall into three sections, as regards treatment those with complete division of the cord, those with incomplete division of the cord where there is pressure either from a foreign body displaced fragment of bone or hæmorrhage, and finally those cases where there is severe pain In cases of complete division operation was held to be useless in partial division, and cases where there was extreme pain advisable

As to the time of operation, the Italian delegates were in favour of immediate intervention Most surgeons recommended a more conservative treatment and longer delay Bonomo was especially in favour of a hemi laminectomy in order to minimize the damage to the spine itself It was agreed that no operation should be undertaken in the presence of bed sores

These conclusions may be taken as representing very fairly and accurately the present opinion on the treatment of spinal injuries Much has been written on the subject but able and interesting as these monographs are the surgeon is often in doubt as to the right course to pursue when confronted with a case

It is, as this conference concludes pretty generally granted that where there is a complete transverse lesion of the cord any operation is useless, except in those cases where there is intense pain from pressure on the sensory roots of the spinal nerves In these operation may be justifiable under certain circumstances In a recent note in the *Lancet* Mayo Robson has suggested that good results might be obtained by grafting the cords of lower animals or by suture of the cord Cases have been published by Mayo Robson and others in which it is claimed that some

good [illegible] Lortat Jacob [illegible] *Lyon Chirurgical* [illegible] December 1915 p 781-809) [illegible] who was struck by a shell fragment at the level of the tenth [illegible] producing complete loss of movement retention of urine, p[illegible] of the sphincter of the rectum and as a sequela large bed sores [illegible] was performed four months and ten days after the injury a large fragment of shell was removed and on removal of the lumina the cord was found to be completely divided with a separation of [illegible] between the two ends It was impossible to bring the two divided surfaces into contact but only to approximate them However on the eighth day after the operation there was an improvement, manifested by movements of the legs and definite reflexes And on the twelfth day there were very definite movements of the legs and cutaneous sensibility had returned to the level of the gluteal fold, but loss of control of the sphincters persisted

It is difficult to reconcile such cases with experimental work unless one assumes, as one must assume that there have been [illegible] of observation of the symptoms of the condition found at the operation

In the course of physiological experiments the spinal cords of [illegible] monkeys have been divided at every conceivable level by a very large number of highly skilled physiologists and this regeneration has never been observed Peripheral nerves in monkeys cleanly divided and carefully sutured unite and regenerate with the greatest constancy Section and suture of a nerve in a monkey is a very much simpler and more [illegible] proceeding than suture of a nerve which has been divided by a bullet or shell fragment and, therefore, if spinal cord regeneration were possible it should be much easier to obtain it in a monkey's cord cut cleanly across with a sharp knife, than in a human cord torn and lacerated by a rough shell fragment These observers would claim the exact opposite — that is that the lacerated human cord will regenerate, although the monkey's cleanly cut cord will not

Such cases require stronger evidence than has been produced before they can be accepted as representing true regeneration

Let it be granted then, that cases where the cord is completely divided are unsuitable for operation and the surgical problem is only theoretically solved The practical problem is to decide in a given case whether the cord is actually completely divided or not Short of actually inspecting the cord it is very hard to decide this point and even then mistakes have been made The patient's symptoms really indicate an interruption in the passage of nervous impulses which may or may not be due to an actual mechanical division of the cord Any injury in the neighborhood of the cord is liable to cause rupture of its delicate blood vessels and a complete block in the passage of nervous impulses Gross hemorrhage around the cord does not seem to be a common cause of these symptoms which are actually usually produced by hemorrhage into the substance of the cord

[illegible]

Apart from this [illegible] the [illegible] be interrupted by [illegible] from [illegible] body such as a [illegible] fragment of shell [illegible] laminectomy [illegible] addition correspondingly [illegible] impression of the [illegible] the [illegible] bring a case of apparently complete division of the [illegible] these possibilities must be borne in mind.

A great deal of the [illegible] will be cleared up by waiting extravasation will become absorbed [illegible] will be partial return of the sensation and motor functions. If [illegible] there is a much simpler problem to decide whether the case should be submitted to operation two or three weeks after the injury than it is after the lapse of a few hours. But in those cases, where an operation has been performed after a fairly long interval the surgeon will always have a feeling that perhaps the results might have been more satisfactory had the pressure been relieved earlier.

Early operation has found favour among the Italian surgeons but their mortality has been apparently fairly high. Statistics of death rates in small cases must always be received with caution. If the cases are carefully selected on conservative lines, only such cases being submitted to operation as are practically certain to improve the death-rate will be low and the percentage of successes high; if however a larger percentage of cases be operated upon there will of course be a higher death rate and a lower *percentage* of successes; but it is just possible that a few cases will be saved from one of the most miserable existences possible as the result of further operation. Gosset reports that out of 200 cases which reached the Lariboisière hospital forty-five were considered suitable for laminectomy; this probably represents the percentage that will be submitted to operation in conservative hands. A certain amount of delay is inevitable, the injury is practically always accompanied with a certain amount of shock which must be dealt with before a serious operation such as laminectomy can be undertaken, and therefore a certain amount of time is often given of [illegible] which will allow of an improvement manifesting itself if it is [illegible] place. Again a number of cases after complete initial paraplegia [illegible] to a considerable extent, but such recovery is rarely perfect and [illegible] again the question arises whether this recovery would not be quicker [illegible] if the rough were an operation performed.

Out of forty-five cases reported by Gosset only one died of the operation. In skilled hands the death rate of laminectomy is not very high [illegible] the mortality after laminectomy is about 8 per cent, but of these [illegible] number die as the result of their injury rather than that of the [illegible].

[illegible] I therefore that the operation is performed under reasonably [illegible] laminectomy probably adds 5 to 10 per cent to the

[illegible] If laminectomy were [illegible] by devoid [illegible] of the cord [illegible] complete in the [illegible] two [illegible] might be [illegible] These risks, therefore [illegible] these are, in the [illegible] the operation itself that [illegible] to [illegible] in exchange for [illegible] of recovery which [illegible] estimate) lies [illegible] the risk of an operation with [illegible] between [illegible] and [illegible] In [illegible] dition of the [illegible] if this is really complete [illegible] is gained, but the [illegible] condition is [illegible] risk, however that [illegible] into a complete [illegible] This is a very [illegible] greatest care and [illegible] in assuring [illegible]

When there is an open and septic wound and [illegible] meningitis, operation, by providing free drainage leaves the situation improved In these cases an attempt would naturally be made to excise the wound as far as possible and to remove torn muscle and fragments of bone indeed, in extensive wounds of the back the toilet of the wound itself relieves pressure on the cord Speaking generally therefore in deciding whether or not to operate on an apparently complete transverse lesion of the cord, the question of the wound can be left out

Too much stress cannot be laid upon the statistics of military surgery if they are numerous they will be collected from a large number of operating centres, the suitability of which for severe operations must if necessity vary enormously owing to the exigencies of the campaign An operation which is justifiable at one operating station is quite unjustifiable at another and the conditions under which he is going to operate and his experience in major surgery must be considered by the surgeon before attempting this class of work

Before definitely deciding to operate a skiagram should be taken so as to ascertain the nature of the bony injury accurately and to obviate any error as to the site of the lesion, which might occur if this were only inferred from the symptoms

Incomplete division of the cord as has been seen may simulate complete division, but it must be remembered that when the cord is actually severed, no impulses at all pass and hence the slightest voluntary movement or sensation is an indication that some nerve tract is still intact In Case I for example, all that could be made out was some vague sensibility to deep pressure Hence a very careful examination is necessary before the case is classed as an apparent, if not real complete transverse lesion

These arguments hold good for all regions of the cord with certain modifications In the cervical region where the bony canal only loosely surrounds the cord, if the patient survives the shock of the injury a certain amount of recovery usually takes place Further the danger of laminectomy in this region is certainly higher than in the other regions of the

cord [illegible] ly wise in this type of case [illegible] ss of the lesion usually means a [illegible] as good as in the lumbar region where [illegible] pressure on the cauda equina [illegible] than the soft cord but it is in this region that the best results will be obtained by laminectomy

As regards obviously incomplete lesion of the cord very much the same argument holds good, but of course the prospect of success is very much greater

One or two points might be mentioned as to the actual operative details The infiltration of the muscles with a solution of 1 in 10 000 or 1 in 20,000 adrenalin in saline certainly minimizes the oozing from the muscles and is to be recommended—not so much from the point of view of having the loss of blood, as of preventing the field of the operation becoming obscured Indeed the whole success of the operation depends upon the surgeon seeing what he is doing, throughout its whole course The patient is conveniently placed in a semi prone position supported by sandbags against his clavicle and pelvis arranged so as to interfere as little as possible with his respiration If wounds are present, these will determine the line of the incision but if there is no wound it is better to mark out a long flap with its base downwards that is towards the side on which the patient is lying reflecting this flap so as to expose the whole affected area The muscles are separated from the spine and laminæ and drawn well aside then the spines of the vertebræ are cut off one of the best instruments for this purpose being a powerful bayonet shaped instrument called Sargent's laminectomy forceps The next stage is a thorough cleaning of the laminæ, well above and well below the actual site of the injury, and well outwards to the articular processes The operation should not be proceeded with any further until this has been done thoroughly and all oozing checked It is then possible to nibble or trephine one a way into the bony canal and to remove any foreign bodies or depressed bone It is a good plan to take one lamina above and one below the affected spot If the theca is untorn and there is no evidence of intrathecal hemorrhage it is better not to open it but if it is opened it should be closed with fine catgut sutures rendering it as watertight as possible If the operation is performed through unbroken skin suture of the muscles should be carefully performed so as to obliterate any dead space and the skin can then be brought together with a continuous suture If there is a wound due allowance must be made for its efficient drainage

Some surgeons are greatly opposed to the use of a drainage tube but provided that the dressing contains a reserve of an efficient antiseptic for example cyanide gauze moistened with one in forty carbolic acid, a drainage tube is free from risk

If there is any bladder trouble it is a good plan to establish a suprapubic drainage which is maintained until recovery has taken place or if the fistula is kept open permanently

ON A NEW METHOD OF INTRAVENOUS [illegible] WITH SPECIAL REFERENCE TO THE [illegible] OF SALVARSAN AND ALLIED REMEDIES

[illegible]

The apparatus [illegible] (A) [illegible]

[illegible] of a burette carrying the fluid [illegible] length of rubber tubing to the intravenous [illegible] elevated considerably to overcome the [illegible] especially the friction incident to the passage [illegible] was that of the needle used. It has been [illegible] to stand to support the burette at the [illegible] solution these two communicating [illegible] the tube carrying the needle.

This apparatus was clumsy [illegible] in operation as the drug had to be flushed out of a [illegible] rubber tubing otherwise the dosage was inaccurate [illegible] of the solution was wasted. Further the temperature of the [illegible] drug during veins could only be gauged very roughly. Finally [illegible] difficult to eliminate and sterilization complicated.

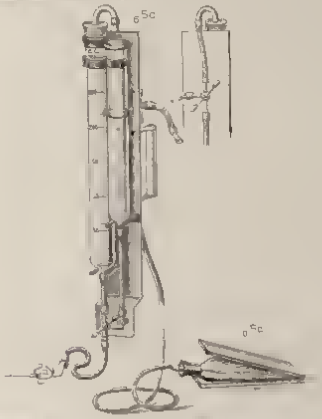
The pump method overcomes some of these objections. It consists of two vessels one for the drug solution the other for [illegible]. A rubber tube is led from either of these at will to a three way cock the opening of which leads to a 20 c.c. glass syringe and the [illegible] the rubber tubing carrying the needle.

This apparatus is more portable but still suffers from many [illegible]. The three way cock has to be turned ten times and the piston of the syringe withdrawn and pressed home five times to give one dose of 100 c.c. This is tedious work. Accurate dosage is most difficult unless a separate quantity is placed in the receiver for each injection. With this apparatus bubbles of air were most difficult to eliminate from one or other parts of the tube or syringe and it was most difficult to manipulate the syringe and cock without disturbing the needle in the vein. I have used this apparatus which is the type supplied for use in the service only obtaining relief from my troubles when the syringe got broken and I discarded the method altogether.

The illustration shows the apparatus I have used for the past nine months with complete satisfaction. Two burettes are mounted on a metal plate, with a detachable handle placed on its posterior aspect. A rubber cork pierced by a glass tube fits immediately into the open top of the large

burette. [illegible] tube is connected with the two way tap (at the back of the [illegible] in the small illustration). Six small detachable units [illegible] needle [illegible] tube and mounts are supplied with [illegible]

[illegible] methods of inducing an pressure. The simplest is an [illegible] follows but a certain amount of practice is [illegible] a pressure which is neither too great nor too little [illegible] the three way cock is not required as the bellows are [illegible] the long glass tube at the top of the large burette [illegible] falling. An ordinary rubber hot water bottle [illegible] by a tube with a cock behind the plate.



[illegible] pressed with the foot applied to the upper of the two [illegible] which it is placed. This method ensures an even [illegible] When it is to be used the apparatus is held in the right hand [illegible] handle provided. The required doses of [illegible] are poured into the large burette, and the cock [illegible] burette is then filled with normal saline solution [illegible] for the first injection. One of the needle units [illegible] three way cock. Saline is allowed to flow [illegible] the point of the needle being inverted and raised [illegible] has been extruded. Saline is then turned off and

[illegible] It is then [illegible] level of the [illegible] is watched [illegible] at the same time causing no swelling at the site of injection This proves that the vein has been entered Air pressure is then applied by the assistant and the cock turned so as to allow fluid to leave the large burette The air pressure above this column of fluid compensates for the lack of hydrostatic pressure the tube from apparatus to vein being only 6 in long The required dose is given and the cock again turned, so as to flush out the unit with saline forcing the remainder of the dose into the vein The needle is then withdrawn from the vein and the unit detached and replaced by another The apparatus is then ready for the next dose In order to facilitate the giving of a correct dose, a small metal indicator is used on the large burette to mark the level of the fluid The illustration shows the indicator on the small burette

The description of this operation may suggest it is a lengthy one, but such is not the case, it being in fact extremely rapid the secret of this being that the unit is so short that its flushing out is a matter merely of seconds The time from introduction to withdrawal of needle does not exceed one minute and if the arm of the next patient has been prepared and tourniquet applied the needle should be entering his vein one minute later, as all that has to be done is to change the unit and to pass on to the next bed the assistant carrying the apparatus The claims made for this apparatus should be examined from the point of view of the operator who specializes in the treatment of syphilis and who gives a large number of injections The preparation of distilled water and the sterilization of flasks to hold the same places this form of treatment outside the scope of the general practitioner in the majority of cases The operation will be performed in future largely by specialists and in institutions where many cases are under treatment especially in view of the steps now being taken by the Government for the suppression of this disease This being so an apparatus which is always ready for use and extremely rapid in action becomes a *sine qua non*

These claims may be tabulated as follows :—

(1) It is simple in construction and it has no moving parts such as a syringe with its attendant liability to get out of order as a result of wear and tear or injury

(2) The technique is entirely free from complication as one cock alone has to be turned after the needle has entered the vein

(3) Air-locks and bubbles of air in the solution are eliminated with greater ease than by any other method because the tubes through which fluid passes are shorter (burette to needle being about [illegible] in) Further, there are less traps and angles in which air might become isolated

(4) The difficulty of blood entering the needle and causing blockage by clotting is avoided, as with the very short length of tube used, which is full of saline and the cock turned off behind it no blood can enter the needle during or after introduction

(a) The dosage is accurately measured and prepared in the ordinary way, being graduated in cubic centimetres, and [illegible] the drug solution for the number of injections to be given [illegible] the apparatus before the first injection. In this way the dosage is to be varied in different patients, or they may all be given the same quantity.

(b) The rapidity of the operation. The usual time taken is a dozen injections being about twelve to fifteen minutes provided there is no case is encountered in which there is great difficulty in entering the vein.

(c) The temperature at which the fluid enters the vein is much more accurately estimated and adjusted for two reasons. Firstly because there is a large quantity of fluid in the burette, the temperature of which tends to fall very slowly; and secondly because the shortness of the tubes makes the loss of heat by conduction in them negligible. Hitherto there has been a considerable and unknown loss of heat from the great length of time consumed in introducing the fluid by the old method. With this apparatus the temperature registered by a thermometer placed in the larger burette will approximate very closely with that at which the fluid enters the vein. This fact is not of great importance when dealing with the relatively small quantity required to dissolve the drugs used in specific disease, but becomes a matter of some moment when the apparatus is used for the introduction of the large bulk of fluid necessary when treating shock, &c., by intravenous saline infusion.

(8) Sterilization and the maintenance of the apparatus in an aseptic condition in the intervals between use is an extremely simple matter. The enamelled metal box designed to receive the apparatus is kept full of 1 in 40 carbolic solution, in which the apparatus rests face downwards. When required for use the assistant slips the detachable handle into the back plate and lifts it out. It is then flushed out with saline and is ready for use afterwards being returned to the carbolic solution till it is again wanted. This technique has been followed out for the past nine months during which time the instrument has been in use with entirely satisfactory results.

(9) Bulk and portability. From these points of view it compares favourably with any apparatus hitherto in use for multiple injections, the apparatus (with the exception of the hot water bottle) being contained in a box 18 in. by 4 in. by 3 in. approximately.

It may be of interest to add a brief note as to the use of galyl in conjunction with this apparatus. The quantity of distilled water—100 c.c.—commended for the solution of a 0·4 dose of galyl appears to be unnecessarily large. I dissolve a 0·4 dose in 40 c.c.; this gives an easily workable ratio—35 c.c. being equivalent to 0·35 gram, and so on. The average temperature reaction in 230 injections given was 99° F., and this may have some connection with the fact that the arsenic content of a maximum dose of galyl is much less than that of neosalvarsan, suggesting that the dose of galyl might be advantageously increased.

NOTES ON THE OBSERVATION AND TREATMENT OF SYPHILIS IN THE NAVY

[illegible]

[illegible]

THE comparatively [illegible] branch of medicine that [illegible] the present the [illegible] Navy

'606' was [illegible] in 1910 [illegible] in penetics Its effect upon syphilis [illegible] was astonishing and is still astonishing The advent of the drug was obviously the first effective step in the cure of syphilis the only factor which required to be worked out was the number of doses necessary to ensure a *permanent* cure

Very soon after its introduction, however, the fog began to descend as it does upon every new discovery in medicine The drug became a staple article of medical practice every one used it but no one studied it In 1911 one of us wrote [1] Considering the wholesale manner in which it has been applied we are disappointed in the number of facts which are absolutely determined From Germany for example streams of papers have issued containing nothing beyond what was already known in March 1910 namely that '606' will cure syphilitic lesions The whole ordeal of '606' was to attain *permanent cures* but from a study of the literature we have been unable to discover precisely how many cases were treated how many were regularly observed and how many were found to relapse

The disappointment remains in 1918 We know of no one who can produce 100 cases of acute syphilis which have been followed for two years after treatment with '606' in fact no one knows what '606' really can achieve in the cure of syphilis

So far as the Navy is concerned the factors which have operated in obstructing the normal progress of knowledge are tolerably clear The most important is the absence of team work That is to say there is little or no co-ordination between the efforts of different officers in this matter The responsibility for the diagnosis and treatment is constantly shifting None of the officers through whose hands it passes have any personal knowledge of the case except as it presents itself for the moment

[1] In convenient for ease of this paper we refer to all Salvarsan drugs as '606' and all Neosalvarsan drugs as '914'

and thus few have any opportunity for gauging the correctness of their diagnosis or the efficacy of their treatment.

Especially is this so in the large hospitals where improvements in treatment should be worked out. A constant stream of patients come, are diagnosed, treated and discharged, but the medical officer responsible for these measures may never see the men again or hear of them again. He has only occasional opportunity for observing the effect of his treatment and thus he and his successors are compelled to proceed blindly from year to year, while the Service derives practically no benefit from the vast opportunities of its medical officers.

It has been recognized that an organization should be established for permitting medical officers in hospitals to obtain knowledge of the subsequent histories of their cases and with this object a number of measures have been approved and are referred to in the present paper.

Principles of the Treatment of Syphilis in the Navy.

In making an attempt to establish the most satisfactory treatment for syphilis in the Navy, it is essential to recognize the broad lines upon which work must be carried on.

It is useless to treat each man individually, to give one man one sort of drug and another man another sort or to give one so many doses at such and such intervals and another other doses at other intervals. The treatment must be standardized and only varied to suit broad divisions of the disease. Having developed a rigidly standard form of treatment and applied it in several hundreds of cases it will be possible to state that the particular form of treatment will cure so many men *per cent* and will not cure so many. The form of treatment may then be varied and a further series worked out and from the result it will be possible to say that one form of treatment is better than another because it cures a larger percentage of men.

The form of treatment to be arrived at is the optimum, that is to say that treatment which in the shortest time with the smallest expense will cure a *maximum* high percentage of cases. It is possible for instance that four doses of an arsenical preparation will cure 95 per cent of cases of primary syphilis, while at least ten would be required to cure 100 per cent. From the point of view of the Service it would be wasteful to give every man six extra doses merely to gain an extra 5 per cent of cases and this four doses would be better for the Service than ten. Having arrived at information such as this the effect of three doses could then be investigated.

Again it is useless to confuse the issue by mixing drugs. If it is desired to find out the optimum form of treatment for the Service it is useless at time to give courses of mercury after the arsenical treatment because the value of the first treatment cannot then be estimated. It is so much to be regretted that the aimless administration of mercury as

[illegible] It has of course [illegible] advantages [illegible] The patient [illegible] will render treatment [illegible] not so [illegible] In the Service however [illegible] this sort do [illegible]

On the other hand many writers state that "606" plus mercury is better than "606" alone. We will admit that this belief is very general, but we will not admit that it is anything more than a belief. No one has ever produced a series of cases for comparison treated by both methods. The combined treatment really had its origin in a feeble and tentative "606" therapy when this drug first came into general use. Large numbers of persons used it who had no special qualifications or facilities for guarding against accidents. They therefore gave one or two doses of "606" to clear up the lesions and then continued with mercury as of old.

Quite apart from confusion there is another factor which is not without importance. When a man is treated with a course of "606" lasting ten to fourteen days and then is not treated again during two years a negative Wassermann reaction, if proved to be present throughout this period, is very strong evidence that he is cured. If, however, the course of "606" is followed by "continuous mercury," the spirochætes may be kept under the limit detectable by the reaction and thus when mercury is used, the Wassermann reaction is not such strong evidence of cure. The man may relapse later. It therefore follows that when a man is treated with mercury, his doctor cannot so certainly assure him that he is cured. The argument will, perhaps, be clearer if the reader returns to this section after studying that dealing with the Wassermann reaction.

In view of the considerations detailed above we are using at present at Haslar a course of six half doses of "914" during a period of sixteen days and we do not recommend mercury treatment to be carried on afterwards in ordinary early cases of syphilis. Our results can then be compared at a later date with another series treated with mercury either at Haslar or elsewhere. We recognize that in a matter of this sort our recommendation cannot be binding on medical officers who think otherwise, but it is hoped that in most cases this will not be so.

Mass experimentation is at present the only rational way to treat syphilis in the Navy, and to make it successful a high degree of efficiency must be arranged for in the large treatment centres and the co-operation of medical officers outside must be enlisted.

THE SYSTEM OF RECORDS IN HOSPITALS

In order to increase the efficiency of the large centres a new system of records has been approved to replace that formerly in use, and an account of this may be of general interest.

A card index system for recording cases of syphilis is now official in the hospitals at Haslar, Plymouth, Chatham and [illegible]. The card index system supersedes the "syphilis register."

The card system has been designed to ensure the collection of all important details of a case on a uniform plan and with a minimum of trouble. It is also designed to allow of an easy following of a case from the time of treatment to the date of cure.

The following is a reproduction of the obverse of the card (M. 207), filled in with an illustrative case. The card measures 7¾ × 5 in.

M. 207. (Established—March 1918.) No. HB 345

A. B. Aged 18 Rating O. Sea. Ship Minotaur Type C I

Adm. Mar. 1 18 Disch. May 30 18 Days sick 90 Infect. Date Mar 25 18 Place Portsmouth

[illegible]		Wassermann		Clinical notes
Date	Result	Date	Result	
Mar. 5, 1918	Pos	May 5 1918	Pos	Original Present: Multiple indurated sores [illegible] and under prepuce. Ulcer to right of frenum. Inguinal adenitis. Papulo-squamous syphilide, trunk and limbs Previous Treatment: None Condition on discharge: Sores healed, rash fading

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	N. A. B.	Aug Nov Feb. 1919 Mar Sept Feb. [illegible] Aug	R. A. H. (Fo) Ramsay	Neg Pos	Aug. 11 1918 Nov. 16 Feb. 5 1919		W. R. relapse Recalled

[illegible] May [illegible] 18 Complete [illegible]
W. R. neg

[illegible] *Grounds of Diagnosis.*—Space is provided for the grounds of the clinical diagnosis, including the date and result of spirochaete tests and Wassermann tests.

The *spirochaete test* is essential for exact work. Many sores on the penis are so atypical that a diagnosis of primary syphilis is seldom certain without a demonstration of *S. pallida*, and therefore every effort should be made to apply this test in all cases as a routine. The details of a satisfactory procedure have been discussed already in the Journal [2] and a number of dark ground apparatuses have been supplied to facilitate this work.

Here it is only necessary to urge that the spirochaete test loses much of its value if not carried out in the most satisfactory manner and with

[illegible] *Mary* [illegible]

[illegible]

[illegible] of the [illegible] S[illegible] [illegible] stored [illegible] for instance [illegible] hind S[illegible] [illegible] [illegible] difficulties [illegible] prepared [illegible] [illegible]

With [illegible] slips in the [illegible] should be [illegible] [illegible] [illegible] We have found [illegible] examples of [illegible] the development in [illegible] granularity

The *Wassermann R[illegible]t* is an alternative method of [illegible] limitations should be [illegible] understood It is a [illegible] complexity which requires a very considerable [illegible] successfully We may first discuss its value when [illegible] *[illegible]*

A positive Wassermann reaction means that a man has [illegible] has had syphilis very recently so recently that the [illegible] had time to fade away in the [illegible] When we assert that a positive [illegible] indicates syphilis absolutely we do so without qualification [illegible] yaws and possibly also in other parasitic or trypanosome [illegible] at the same time we are prepared to admit that our assertion [illegible] proved, mainly because it is impossible to collect 1 000 [illegible] persons who can be *[illegible]* not to have syphilis and then [illegible] possible to show that a non syphilitic does not give a positive [illegible]

One of us [?] has examined in the usual healthy adults [illegible] showed any signs of syphilis but [illegible] of these had positive [illegible] and those of the positives who were questioned gave history of syphilis The numerous non syphilitic conditions which are commonly alleged to give positive Wassermann reactions do not give this result with the reaction as carried out at Haslar The matter must therefore rest upon general impressions founded upon experience At Haslar alone 10 000 Wassermanns are performed a year

The other aspect of the question of specificity is concerned with the value of the negative result in diagnosis It will be understood that like all other qualitative tests the Wassermann reaction is only capable of disclosing the presence of a certain quantity of reacting substance

T

Thus it will only give a positive result in the presence of a certain number of spirochaetes. If there be the number of spirochaetes [illegible] the reaction will be negative although the man will have active syphilis. In practice [illegible] the reaction has been [illegible] that x is very small and that *an active syphilis [illegible] will give a positive reaction practically always.*

In primary syphilis the reaction is, of course, often negative merely because the number of spirochaetes has not yet reached x. The value of the test in primary syphilis has been discussed fully [2] in the Journal already. Secondary rashes and tertiary lesions in an active condition are practically always accompanied by a positive reaction, and therefore if a man is suspected of having a syphilitic rash or a syphilitic ulceration and the reaction is found to be negative the *diagnosis of syphilis is almost certain to be wrong* and can hardly be persisted in for practical purposes. On the other hand there are conditions in which the reaction is sometimes negative in the serum. Thus in some cases of cerebrospinal syphilis where the disease is confined to the nervous system the reaction may be positive in the cerebrospinal fluid, but negative at first in the serum. Or again in some parts of the body—for instance in the eye—a very minute lesion may occasion many symptoms but may be too small to induce a positive reaction. In general however, for practical purposes a suspected lesion should seldom be diagnosed as syphilitic in spite of a negative test.

We have up to now discussed the value of the Wassermann reaction when carried out *without error*, but the test is so complex that error can never be absolutely excluded. The error depends upon two factors, the human factor and the technical factor.

When 200 bloods have to be collected and tested every week the human factor cannot be absolutely excluded. The most careful organization must fail sometimes. The specimens go through so many hands and are subjected to so many manipulations that mistakes are inevitable. This must be admitted and therefore if the result of some test is looked upon as surprising, or quite contrary to expectation, it should be confirmed with a further sample.

The chief error is however the technical error. As is well known there are a number of ways of carrying out the test and some are better than others. This question has been inquired into recently by a sub-committee formed by the *Medical Research Committee* and three methods have been selected by them as representing good principles of technique. A Wassermann reaction as accurate as possible being essential for diagnosis and control after treatment, it has been arranged officially between the hospitals at Haslar, Plymouth and Chatham to standardize their technique according to one of those approved by the *Medical Research Committee*, namely, that of Fildes and McIntosh, which has been in use at Haslar for two years.

Similarly to avoid confusion and to make reports from different

hospitals comparable the three naval hospitals have adopted a uniform nomenclature for reporting results as follows —

Positive	(corresponds to Hinton's [illegible])	Diagnosed as syphilis
Weak positive		
Very weak positive		Used only in the case of a man who is known to have had syphilis.
Doubtful		Used in the case of tests for diagnosis. If necessary to be repeated

Subsequent History — Under the heading "Subsequent History" upon the card, it is seen that provision is made for seven Wassermann tests after the man has left the hospital These tests are performed upon samples of blood sent by the medical officers in ships at particular times these dates being recommended on the syphilis case sheet on discharge from hospital and noted at the same time in the column on the card

In arriving at dates suitable for a repetition of the test and at the number of tests necessary we have been guided by the following considerations —

When a man has been treated for syphilis with one of the arsenic compounds the spirochætes in the body will be so reduced below the number x that the Wassermann reaction will become negative This event will not, however take place immediately after treatment but always requires a certain length of time depending upon the age of the infection and the technique of Wassermann test used With our technique it is normal for the blood in a case of secondary syphilis to become negative in eight to ten weeks after treatment In older cases of syphilis however the blood takes much longer to become negative and indeed often entirely fails In order, therefore, to observe the immediate result of treatment upon a case of secondary syphilis we recommend the first test to be carried out three months after treatment If the blood is not then negative it is abnormal and the case requires watching

The blood having been observed to become negative it is necessary to examine it periodically to note that it remains negative The state of a man three months after treatment with a negative reaction may be either that he has no spirochætes in his body and is thus cured or that he has less than x spirochætes and is not cured The only way to find out which of these possibilities is present is to watch the blood for a relapse The relapse being due to an exacerbation in the activity of the spirochætes these will always increase in number above x and thus a positive Wassermann reaction will always precede a clinical relapse by several weeks

It is found that relapses of the Wassermann reaction may be detected conveniently by repeating the test every three months for the first year The dangerous period is nine to twelve months after treatment

The next problem to be decided is how long it is necessary to continue with negative Wassermann tests before it can be decided that all spirochætes were destroyed by the original treatment Exact knowledge upon

[illegible] Thus if we [illegible] assume that a patient is cured if [illegible] years we think that we are [illegible] us to be highly improbable [illegible] become negative within the [illegible] down negative tests for two [illegible] hips When however cases [illegible] this is not so improbable as we [illegible]

We therefore [illegible] routine seven tests over a period of two years and then [illegible] consider the man cured If at any time the reaction becomes [illegible] again we call the case a relapse and the [illegible] treatment [illegible]

It is becoming [illegible] common to have cases sent in as relapses with [illegible] on the penis [illegible] spirochaetes These cases must be very [illegible] examined when the great majority will be found to be reinfections The most important [illegible] points are (*a*) the exact position of the second sore as compared with that of the original sore and (*b*) the state of the Wassermann reaction

In the first case (*a*) the second sore is usually found to be in a different position to the first hence the importance of describing accurately on the [illegible] the site of the initial lesion With regard to the Wassermann reaction (*b*) this should always be positive in the case of a relapse but will often be negative in a reinfection At the same time it must be remembered that the positive reaction sometimes develops much sooner after infection in the case of a reinfection than in the case of the original infection

In order to make this scheme for following cases workable a number of points must be noted —

(1) When a large number of bloods are sent every week to the hospital laboratory for test it is essential for the laboratory to recognize which of the bloods belong to cases which have been treated in this hospital A reference number has therefore been instituted which is marked on the right hand top corner of the card and is stamped for information on the syphilis case sheet This reference number with letters indicating Haslar Plymouth Chatham and Lambeh *must be affixed to all samples of blood sent in for test from outside*

(2) Every effort should be made to send in blood samples at the time indicated on the syphilis case sheet and to the original hospital of treatment also indicated, in order that they may be examined throughout by exactly the same technique and the results noted without delay

(3) If for any reason such as distance the blood cannot be sent to the

[illegible] nearest laboratory [illegible] information [illegible] and the result [illegible] hospital [illegible] Wright's capsule [illegible] in satisfactory [illegible] by [illegible] any distance in any [illegible] they are collected by venipuncture [illegible] sterile manner and the serum is separated from the clot

(4) If the man relapses and is admitted into another hospital this hospital will forward the essential details to the original hospital for information

The importance of these details has been insisted upon by the issue of an Admiralty Order (A W and M O 1145 1918)

The punctual sending in of bloods with the proper information attached is undoubtedly much facilitated by the use of a special 'Wassermann reference sheet It has, therefore been decided to issue to all ships and establishments as part of their stationery stores a special form which is to accompany every specimen of blood sent in for test M O 3367 1916 is thus superseded The form is based upon one which has been printed and used in the Royal Naval Barracks, Portsmouth for over a year

We have also observed that the difficulties of collecting bloods is much increased by the use of totally unsuitable blood capsules and further for the same reason many samples become lost in transit To counteract this source of failure, an exact specification has been prepared and approved to which all capsules issued for use must conform All deliveries from the manufacturers are to be passed as satisfactory by one of the laboratories We also propose to issue from Haslar together with the capsules short directions as to the best method of use

Clinical Data —The section of the card reserved for recording the clinical condition is intended to be used for the essential points only In order to estimate the effect of treatment upon different types of case, these have been classified and are denoted by letters added in the space at the right hand top corner of the card

The three Naval hospitals (Haslar Plymouth and Chatham) have agreed to denote with the letter A cases of primary syphilis with spirochetes present but Wassermann reaction negative, B cases of primary syphilis with positive Wassermann test but no general signs C cases of secondary syphilis, i e with signs other than a primary lesion and glandular enlargement up to eighteen months from infection D cases with or without symptoms over eighteen months from infection

The chief factor which governs the effect of treatment in syphilis is the time factor i e, the length of infection and this has been taken as the real basis of the classification As has been pointed out already by one of us [4] a classification by symptoms is a purely arbitrary procedure and the only real difference between a case of secondary syphilis and a case of primary syphilis is the longer period of infection in the former It is important in this section to note exactly the clinical data which relate to

[illegible] if necessary at [illegible] extent upon the [illegible] with which the probable date of infection is determined

Treatment—It is recognized that when the optimum treatment for [illegible] is unknown only harm can arise from too much standardization [illegible] the space allotted on the card for the record of treatment merely [illegible] for a number of doses of an arsenical compound

It has been considered unnecessary to reserve a special section for [illegible] treatment such as mercury, because this is not given to any great [illegible] in Hospitals and if given after discharge the fact can be recorded [illegible] remarks column of the subsequent history section The [illegible] information is supplied by the medical officer when sending in the blood

In order to classify the relation between treatment and the type of case we have at Haslar adopted a series of numerals to represent different types of treatment

Thus 1 — A course of six half doses of "914 at intervals of three days
2 A course of three or four full doses at intervals of five to ten days
3 A course of three or four full doses at monthly intervals
4 Special courses

By combining the letter denoting the clinical type with the number of his treatment, we can then refer to a case as an A1 case or a B3 and so on. This classification is recorded in the right hand top corner of the card In estimating the results of treatment, then it is only necessary to collect from the card drawers all A1 or B3 cases and to follow their records At Plymouth and Chatham the numbers used for classification will not necessarily correspond with those at Haslar but the results can be correlated centrally

Relapse or re infection

Clinical condition —

Treatment				Subsequent History			
Date	Dose	Drug	Date for W.R.	Ship	Result	Date	Remarks

Relapse or Re-infection.—On the reverse of the card accommodation is provided for following a man's record in the event of a relapse or reinfection. The details differ very little from those on the front of the card.

THE SYSTEM OF RECORDS OUTSIDE HOSPITALS.

At the present time a man upon acquiring syphilis is provided with a syphilis case sheet upon which particulars of his condition and treatment are recorded from time to time. The sheet is intended to be a record of the man's disease from beginning to end. The present sheet appears to us to be lacking in certain important details which prevents any review of the original diagnosis by a later observer.

Owing to reasons of economy it has been considered undesirable to revise the syphilis case sheet at present, but when the proper time arrives it should clearly comprise all the information of the hospital record card (M. 207).

Our conception of a revised sheet is somewhat as shown on next page.

The first section is to be used by a medical officer outside a hospital and in it he should enter exactly the grounds upon which he has arrived at a diagnosis of syphilis and also what he has done. The second section is to be used by the medical officer in a treatment hospital. He again goes over the same ground and checks the findings of the previous medical officer. He is also in possession of greater facilities for diagnosis and opportunities for longer observation and thus should decide finally whether the diagnosis syphilis should stand or be cancelled.

We consider that there is a great need for some such check upon the diagnosis of syphilis. When once it has been made and treatment started it is impossible to decide for certain whether the man ever really had the disease.

The hospital treatment is entered in the special section and also the recommendations. The name of the hospital to which the bloods are to be sent is also entered with the reference number. It is understood that when Portland, for instance, issues the sheet the bloods are sent to Haslar because Portland does not carry out Wassermann tests. Upon the reverse of the sheet the man's history is followed after discharge from hospital.

In view of the numerous accidents which may befall the man it appears to be useless to go into too much detail. The page is ruled out in columns for any subsequent treatment, the results of blood tests as they are reported to the ship from the hospital and remarks. If greater space is required for remarks, for instance, in the event of a relapse, the whole sheet should be written across.

The form (M. 121) now in use is looked upon as a makeshift and the most important details such as reference numbers, dates for blood tests and other recommendations are stamped upon it with rubber stamps.

Probable date of [illegible]
[illegible] tests [illegible]
[illegible] and tests [illegible]
[illegible] symptom

Treatment —

Signature of M O
Rank

Space to be used in a hospital

Present symptoms

Probable date of [illegible]
Spirochaete tests with dates
Wassermann tests with dates
Original symptoms [illegible] old case

Treatment

Date	Dose	Drug	Dates for Wasse[illegible]	[illegible]

Blood samples to [illegible]
full [illegible] quantity, R[illegible]

Space to be used in a hospital

Condition on discharge
Signature of M O
Rank

Hospital
Date

Rank

SPACE TO BE USED AFTER DISCHARGE [illegible]

Treatment dates & C[illegible]				Wassermann				
						Remarks	Signature of M O	
Mercury	Date	Dose	Drug	Result	Date			

Oct. [illegible] of the [illegible] Hasler

The accommodation [illegible] which at Haslar is [illegible] beds but under pr[illegible] [illegible] considerable number of extra beds are often required to [illegible] with additional cases. The minimum number of medical offi[illegible]ssary to deal with these cases in an efficient manner is th[illegible] frequently employed in the section with occasional temporary ass[illegible]. Owing to the technical nature of the work casual assistan[illegible] of much value. These three officers are wholly employed in the [illegible] section all spirochæte tests, Wassermann reactions and exa[illegible] cerebrospinal fluids are carried out by a separate staff in the [illegible]. Every case suspected of syphilis is investigated by the S.M.O. [illegible] with. The examination takes place in the special theatre attached to the [illegible] section and as this proceeds the notes dictated by the S.M.O. are [illegible] upon the card by an assistant.

The Examination of Cases.

The examination is conducted upon the following lines:—

(1) *History of the Case.*—Inquiries are made as to the existence of any previous syphilitic infection. Histories [illegible] are however so often unreliable that attention should [illegible] be [illegible] written records especially when these relate to spirochæte or Wassermann tests. Notes upon this subject may be entered under [illegible] or [illegible] original. When however a previous infection is recent the particulars are entered upon the reverse of the existing card. The history of the present attack is then investigated and the details entered under the proper headings. It is important to obtain as accurately as possible the probable date of infection, bearing in mind that this is not necessarily the date of the last exposure to infection. The date and result of any spirochæte or Wassermann tests are entered but in many instances it is wise to confirm these. Many cases on arrival have already received [illegible] gold in hospital ships or elsewhere and this fact should be [illegible].

(2) *Clinical Examination.*—If sores are present their number, type and exact site are noted, together with the extent of the glandular involvement, &c., the state of the skin, mucous membranes and anus. For the purpose of classification it is important to note whether signs of a generalized eruption other than idiopathic are present or not. No case of syphilis is treated until [illegible] unless a general routine examination has been made of all systems. This is therefore carried out and any abnormality noted. We consider that this rule diminishes the chances of accidents consequent upon treatment.

(3) *Spirochæte Test.*—Every case which presents a sore upon the penis of whatever type with no obvious and typical symptoms of secondary syphilis is subjected to this test.

We strongly deprecate the diagnosis of cases of penile sore upon such fallacious grounds as induration or the "shotty" feel of the inguinal

glands. If [illegible] *pallida* may be [illegible] inspection and palpation. [illegible] experience the [illegible] dental [illegible] come to an notice [illegible] period and already [illegible] scabetic.

There are still signs that it is not yet sufficiently [illegible] that the application of local antiseptics to suspected syphilitic [illegible] is a most pernicious practice destroying as it does the S [illegible] and making the early diagnosis in many cases impossible. These [illegible] are often applied by unauthorized persons and S.M.O.s should give [illegible] instructions that no preparation other than saline solution should be applied in any case except by their direct orders.

The technique and routine of application of this test has already been discussed in the Journal [illegible]. When the sore has not been treated and is examined by an experienced person by the dark ground illuminator one negative test practically excludes syphilis but the test may be repeated once. When treatment has been applied the test is repeated two or at most three times at two or three days interval. If all tests are still negative it will be necessary to exclude syphilis with the Wassermann reaction. If the sore heals up we send the man to duty with a recommendation that he should have three blood tests carried out at monthly intervals the first to be taken one month after the date of the last in hospital.

(b) *Wassermann Test.*—In every case of suspected or obvious syphilis has a Wassermann test performed not in all cases for diagnosis but sometimes to have a standard against which to compare the results of later tests. The fact also of a negative reaction in primary syphilis shows that the case is early and therefore has prognostic value. It will be remembered that the Wassermann reaction merely indicates that a man has syphilis but does not give any evidence as to the stage of the disease in which he may be. Care should therefore be taken that a diagnosis of primary syphilis is not made merely because a man has a sore on the penis and a positive reaction. The case may be one of soft sore in an old syphilitic or a tertiary ulceration. If this mistake is made the effect of treatment will not come up to expectation. The only grounds for diagnosing primary syphilis upon a positive reaction alone is when this has been observed to become positive when it was negative before. Hence the importance of applying the test as a routine even when it is too early in the infection to give a positive result.

From the history of the case the present symptoms, the spirochaete test and the Wassermann reaction a diagnosis of the condition is then made. If all these examinations show that the case is not one of syphilis

[illegible] reside in this category. If [illegible] shown to have syphilis it is necessary that [illegible] with alphabetical group he belongs to, namely A [illegible] D. This [illegible] then added on the right hand top corner the prescribed course of treatment is ordered and the card is placed in the [illegible] in hospital drawer.

(b) *Lumbar Puncture*.—Before however treatment is initiated or before it is continued, if already started every case of syphilis is first subjected to lumbar puncture. The number of cells per cubic millimetre is counted and the fluid is tested by the Wassermann reaction. In some special cases an examination for spirochætes is also made.

As pointed out by McIntosh and Fildes [5] there is reason to suppose that the later manifestations of syphilis in the central nervous system only occur in persons in whom the central nervous system was infected in the early stages of the disease. This suggestion was based more or less upon theory, but it is now becoming more and more common to find that gross lesions of the central nervous system actually do exist in the earliest stages of syphilis without showing symptoms; and it is therefore almost imperative to assume that rests of spirochætes remain from these lesions and sooner or later exacerbate and produce the meningo-encephalitis of the late secondary period or those of the tertiary (G P I).

Under these circumstances the discovery of an infection of the central nervous system in the early stages immediately puts the case in the category of 'possible G P I' and the problem remains whether by intensive treatment in such cases this fate can be prevented. Before however, such special forms of treatment are adopted it is essential to establish definitely that men with pathological central nervous systems are in fact specially prone to later nervous manifestations. This is at present not known. We do not therefore deviate from our ordinary scheme of treatment if we find pathological changes in the central nervous system except under special circumstances.

We intend to make very special efforts to follow the careers of these men. We recall all positive cases for re-examination six weeks from the date of discharge to duty.

The Treatment of Cases

In the treatment of the cases we recognize that we have no exact knowledge and therefore are prepared to alter our present procedure according to the results we obtain. For reasons already discussed we do not use mercury.

In one case of ordinary secondary syphilis which showed no obvious nervous symptoms we found *S. pallida* in the cerebrospinal fluid under dark ground illumination. This is a discovery probably unique.

In Type A B or C cases [illegible] intervals of three days in Type D cases either [illegible]

Cases in D class must obviously present many different clinical types [illegible] it is not possible to give any fixed rule for the treatment [illegible]

D cases without clinical signs are generally treated with course 2 The [illegible] of these vary in each case and being more or less related to the [illegible] of the infection the more recent the infection the greater the [illegible] doses We seldom exceed four full doses in such cases

[illegible] in this scheme we are guided by Service considerations A [illegible] is more easily cured than a remote infection and therefore [illegible] while making the cure still more possible in a fairly recent case [illegible] doses An old case of syphilis is however incurable under Service conditions and therefore it is waste of time and material to [illegible] with such cases

[illegible] class should on the whole be treated intermittently, that [illegible] with occasional short courses or if they have no symptoms they *need* [illegible] be treated at all It is quite useless to blind oneself to the [illegible] present conditions in the Service ordinary cases of positive Wassermann without symptoms are in *general not worth treating* The available resources are already overstrained for efficient work there is indeed an actual shortage of drugs and if every man who has a positive Wassermann reaction is to be sent to hospital for treatment it will only be to the detriment of men who want it more i e the men with manifest lesions

The D cases with active signs usually receive course 1

Course 3 was the old Collieul treatment with doses at monthly intervals We do not use it now

Accessory matters relating to treatment may be mentioned Of the greatest importance is the absolute purity of the water used to dissolve the drug This is all prepared in the laboratory and delivered in sealed flasks to the theatre As is known the essential feature about the water is that it should contain no living or dead bacterial matter [6] This result is most easily arrived at by collecting distilled water into flasks as it issues from the tap of an ordinary large dispensary still The flasks are then plugged with wool and *without any delay* autoclaved These flasks suitably sealed to prevent interference will keep in good condition indefinitely

Such questions as the conduct of the case before and after the injections are unimportant and need not be discussed

The Subsequent History of Cases

The course of treatment having been administered the patient is usually ready for discharge His condition is then noted on the card and the date for W R space stamped with a series of dates on which the blood

[illegible] These dates [illegible] three-monthly [illegible] [illegible] [illegible]

Plymouth (PH) or Larbert (LT) the result and [illegible] forwarded to these hospitals by S M O [illegible] returned direct to the ship

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SOME MEDICAL HINTS IN CONNECTION WITH FLYING

By [illegible] Mar 5 1918

The temperament of the aviator is rather enigmatical and difficult to describe and would [illegible] speculation He seems [illegible] I mean he has the [illegible] appearance of a man [illegible] years older A pilot at 20 frequently has the ways of a man of 30 He is however, of a rather restless disposition, and must always be doing something He rarely settles himself down to read a book and he smokes too many cigarettes He is as brave as you like in the air and does the most wonderful things while flying, but tell him he has to have a tooth stopped or a tooth out and he talks about it for days Stick a needle into him and he makes a tremendous fuss in fact he is very sensitive to pain

I do not think it is absolutely necessary for a man to be a very courageous fellow to make a successful aviator I think that a young man say who drives a car well should think little of driving an aeroplane One is rather inclined to imagine all sorts of dangers connected with flying before one has been in the air, but once you have been up even as a passenger you soon realize that it is not so dreadful, in fact you think it is very pleasant It fascinates you in an extraordinary way so that you want to go up again and again The exhilaration and fascination of the air carries the aviator on and the danger is that he may become over confident On the other hand to be a successful fighting aviator I think the very bravest men are needed and, consequently I am in favour of grading pilots according to their fitness courage capability to stand high altitudes &c

I think the sooner a pilot is sent to the Front after he has completed his training the better it is as I notice that the longer pilots are left on home stations as instructors &c, after they have passed out the less keen and the less anxious are they to take on the duties of fighting pilots The skilled young aviator just passed out is the ideal man for the fighting line and the sooner he gets his chance the better

Every effort should be made to ensure a pilot maintaining his confidence in the air For instance if he is feeling seedy he should be excused flying for a day or two far better lose a day than lose him altogether for if he goes up feeling off colour he may crash or lose his nerve and never fly again Should he crash I can imagine the whole aspect of flying changing for him certain it is that once a pilot has had a bad crash it is about an even chance whether he will be any good again Whether he remembers the crash or not seems to have something to do with its effects upon his nervous system If he was unconscious at the time it will probably interfere less with his after flying career than if he remembers the details

[illegible] effected [illegible] appear [illegible] could [illegible] he had [illegible] did not appear [illegible] to sit [illegible]

[illegible] that a [illegible] with [illegible] as he should [illegible] to the part [illegible] of the [illegible] permit the question [illegible] should be considered [illegible] a breakdown [illegible] of fatigue or flying [illegible] symptoms [illegible] system will [illegible] there remains [illegible] of fatigue the pilot [illegible] from his work [illegible] leave. All senior [illegible] health [illegible] would [illegible] commend such cases [illegible]

[illegible] particular make of aeroplane [illegible] machine [illegible] feels it is going to let [illegible] when a pilot came [illegible] he had lost all [illegible] and then he thought he [illegible] pusher [illegible] tractor [illegible] the matter and assured him [illegible] machine and he now [illegible]

[illegible] but I especially mention [illegible] Medical Officer being [illegible] Flying Officers. No complaint is [illegible] consideration remembering [illegible] maintain the welfare and [illegible]

[illegible] cigarettes. He certainly [illegible] officers and men of [illegible] with a view to the cigarette [illegible] which he smokes a day. The

first point is not to smoke [illegible] the early morning allow one, or at the most, two, cigarettes after [illegible] but none again until after lunch when one or two are allowed After tea two are allowed and between dinner and bed time three or [illegible] consider above ten in a day excessive

These numbers apply to the cigarette smoker only to the man who smokes a pipe cigarettes are [illegible] With regard to the cigarette smoker of twenty five or thirty cigarettes a day I am strongly of opinion that the way to reduce his smoking with the least hardship to himself is as detailed above i e, to stop smoking in the forenoon and to smoke only at more or less stated times during the day Alcohol is best avoided altogether If allowed in an aerodrome it should be consumed after working hours and then should be limited

In the examination of candidates for air work, whether for pilots observers or gunlayers in addition to the ordinary routine examination, special attention should be paid to the following points —

(1) Narrow arched palate or history of neurosis

(2) Deflected septum old injury to nose adenoids and tonsils causing obstruction to breathing

(3) A special breathing test The examiner should see how long the candidate can hold his breath after first getting him to bend to a right angle and expel all the air from his lungs and then getting him to assume the vertical and take a deep inspiration If he is likely to be any good in the air, he should hold his breath for forty five seconds or longer This test seems to be of value, as all the cases of air sickness which I have had the opportunity of investigating were in men who could only hold their breath for a short time. It is interesting to note that experienced pilots and men who have been flying for some time all appear to be able to hold their breath for a longer time than those who have had no flying experience

(4) Teeth should all be made good as the cold air experienced in flying will otherwise cause toothache, neuralgia, &c

(5) Ear disease In view of the sensations pain deafness, &c, experienced in the air, no one with ear disease should be taken on as a pilot, observer, or gunlayer It is important that a flying man should have perfect hearing and his vestibular apparatus should be unimpaired since on the latter his muscular sense and eyesight his co ordination and sense of position in space depends The vestibular apparatus is examined by Barany's test After revolving the candidate with his eyes closed in a revolving chair, you note (*a*) the character of the nystagmus, (*b*) the candidate's sense of projection and pointing, and (*c*) the inclination of the head and body Barany's caloric test may also be used So far we have not found Barany's test to furnish information of any practical value

(6) Pilots should have perfect eyesight and colour vision For observers and gunlayers $\frac{6}{9}$ in one eye and $\frac{6}{12}$ in the other are required Correct colour vision is especially necessary in the event of a forced landing when a colour blind pilot may not be able to tell a green from a ploughed field Heterophoria should be looked for

In the case of a [illegible] is a doubt as to his mental fitness I think [illegible] with him [illegible] and see how he behaves [illegible] has been [illegible] in the rise of [illegible] The [illegible] medical examination of [illegible] gunlayers has never been brought to my notice [illegible] recently joined this station were undergoing instruction for [illegible] Seven out of eleven came to me and stated that they [illegible] in the air and that when they volunteered for gunlayers [illegible] did not think they would have to go in the air. Accordingly I [illegible] the matter to the Commanding Officer and advised that [illegible] for aerial gunlayers should be medically examined before [illegible] and an order to this effect has been issued in A W O [illegible] 1918 No 16 18768

The great points of importance are —

(1) You get the most suitable [illegible] You get a man definitely to understand that he has to go up in an and you give him confidence by showing him that he is physically fit to fly. Pointing out to him the sensations he may experience in the air you tell him it is quite usual to experience some painfulness or dullness in his ears or sometimes a feeling similar to that which one experiences on going down a lift

(2) If a man has been passed fit for gunlayer in the air he is less likely afterwards to try to shirk it by pretending that he suffers from air-sickness &c. Only the genuine cases of air sickness will come and see the medical officer not the malingerer pretends he gets sick with a view to the medical officer finding him unfit for flying

Air-sickness is rather akin to sea sickness but is not so common. The subject actually gets sick, vomits in the air and suffers from malaise. I recently had a gunlayer who had vomited in the air For three days after he suffered from pronounced flatulence and heaviness of the head He had an absolute dread of being expected to fly again, and after four days when he was discharged to duty he was declared as unfit for further flying. Some subjects apparently never get over being sick in the air One gunlayer who had been sick nine times and had not reported to the Sick Quarters was recently sent to me from the Gunnery School for examination as to his fitness to continue His informed me that he had been sick on nine different flights but he was keen to try and overcome it and so carried on On putting cold water in his ear, he was found to have rotatory nystagmus and some giddiness, and he was only able to hold his breath for fifteen seconds This man was declared unfit for flying I have not touched on altitude sickness because no case of such has come under my notice I think that in all cases of air sickness a thorough investigation should be carried out Consequently when a man at this station reports himself as having been sick in the air a medical officer makes a flight with him takes his blood pressure, and investigates his condition generally in the air

THE RÔLE OF THE LEUCOCYTE IN LOCAL AND GENERAL INFECTIONS[1]

By HERBERT LAWRENCE

Part II The Nature of the Leucocyte upon its Exit from the Body with some Indications of the Practical Application to Medicine, Hygiene, &c

THE following simple experiments show how leucocytes will move out of a blood clot and adhere to a glass slide at the same time being influenced by extraneous matter placed upon the glass surface

The ordinary service sterilizer may be converted into a moist chamber as follows Cut a quarter of an inch from the side of an old full plate negative and let it rest upon the lower tray Raise the temperature of the water to 40° C place the microscopical slides upon the glass plate and close the lid The loss of heat is only a few degrees per hour and can be controlled by turning on the current (or steam)

Experiment 1 Prick your finger allow a drop of blood to fall upon a clean microscopical slide and place it in the moist chamber for half an hour or more Take it out remove the clot gently while still moist and wash in water or better still place the slide in a developing dish and gently flow the water over the top so as to wash away the red corpuscles Stain in either of the following ways (1) Place it direct into very dilute carbol fuchsin (2) Fix with perchloride of mercury and stain with carbol thionin (3) Dry and fix with formaldehyde vapour and then stain

The leucocytes will be found adhering to the glass over the area originally covered by the clot, few in number and irregularly placed if the incubation has been for a short period only but more profuse and regular if left in the incubator for a longer time Repeat the process using different bloods, and note the variation in the results

Experiment 2, showing the effect of introducing extraneous matter between the surface of the slide and the clot Place a loopful of freshly distilled water and water that has stood for some time (i e containing bacteria) upon one slide, and upon a second a loopful of liq arsenicalis Dry them in a place protected from dust and then gently allow one drop of your own blood to fall upon each of the dried deposits Incubate in the moist chamber for further longer period and note the results Where pure distilled water has been used the results should be identical with those in Experiment 1 but the dried deposit from water containing bacteria gives a definitely concentrated ring of leucocytes at its edge (see D diagram 3 Sector 7) In the case of the arsenic no leucocytes will be found up to the dried deposit and for some distance around this there will be an area free from leucocytes The poison has been absorbed into the clot and has paralysed the leucocytes in that area (see Diagram 3 Sectors 1 to 3)

Experiment 3 showing a new attribute of the leucocyte—tactile or sense of touch Wrap some clean wash leather round your finger and rub briskly across the surface of a clean slide repeat the same process in a longitudinal direction upon another slide Drop blood as before upon the two burnished surfaces and also upon the unburnished surface of slide 1

Double the number of leucocytes will be found attached to the burnished surfaces as to the ordinary glass surface

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[1] For Part I see this Journal Vol IV No 1 page 1

On the Attitude of Poisons Finally Set in Solution by the Wright Consideration of Wright's Phenomenon

Ponder [illegible] ten years ago that leucocytes migrated between blood-clot and the [illegible] themselves to any [illegible] surface (glass) which kept at blood heat. In the *Lancet* of January 26, 1918, Sir Almroth Wright [illegible] this method as superior to [illegible] more natural method of testing the power of the leucocyte by its capacity to climb the blood-clot [illegible] of the white blood clot. It is a pleasure to refer my readers to this article in question and specially to the [illegible] where a description of what I have called Wright's phenomenon is given, which is simply another rendering of the leucocyte's story that I pointed out in the first part of my paper, and must be perfectly understood if the leucocyte's action upon dried deposits is to be interpreted correctly.

Under heading 10 p. 14 of this Journal January 1918 an experiment is given which demonstrates the different effects of a bacterial poison when introduced into the red and white clots respectively. In the former case the poison is incorporated with the leucocyte and poisons it in a dilution of 1 in 1 000, and the same effect is seen in the arsenical slide (Experiment 2). The only difference is that in one case the poison is directly associated with the leucocyte and in the other becomes associated by absorption (see p. 288). Wright calls this "negative induced effect" and simply means that the leucocyte is poisoned and will not move or attach itself to the glass surface.

The next phase in the story of the leucocyte is more difficult to understand, but a page from its hosts (human being's) pharmacology will explain it. Give a patient a few drops of liq. arsenicalis and he will benefit by it and come for more. Give him a thousand times that dose and he dies. Dilute your liq. arsenicalis a thousand times and try the leucocyte. He will begin to nibble at the dried deposit. Dilute it a further thousand times and the leucocyte will concentrate in double rings round the edge of the dried deposit (as in Slide 1, Experiment 2, and Sector 7, Diagram 3).

In my original experiment of introducing the poison into the white clot, the second dilution (1 in 13) gives a migratory count of 0·4, the third dilution 0·6 M.C., while on further diluting the same the count is again induced to 0·1 M.C. This is called "positive induced effect" and is of great value in testing dried deposits, as the presence of the minutest quantity of poison (arsenic 1 in 1 000 000) is reacted to by the leucocyte.

The Relationship of the Leucocyte to Different Surfaces

The phagocytic and migratory activities of the leucocyte appear to be very much the same in respect to particulate matter. Provided merely particles be of minute size, the leucocyte will take them up is readily as it

[1] *Lancet*, December 14, 1908.

with [illegible] Emigration in this place may be [illegible] in a minute [illegible] like that of gutta-percha or rubber [illegible] upon glass [illegible] or any other absolutely smooth surface A surface produced by powdered glass encourages emigration as does the scratching of a glass slide with lime cinery but these are changes too macroscopical to have marked effect As seen in Experiment 3, burnishing glass surfaces with wash leather is the degree of change that the leucocytes appreciate and they will at times arrange themselves along the parallel lines of friction

The minute irregularities of a rubber surface and the particulate matter entering into its composition can be brought into view under a sixth objective with a drop of oil covering half the field Gutta percha gives rise to emigration in parallel rows of regular spacing If we place a drop of blood at the junctero of rubber and glass and cover the same with another slide (see p 292) the resulting emigration gives the appearance of a positive induced effect The rubber surface is covered with leucocytes right up to the edge while upon the glass surface next to it there are few or no leucocytes, which however increase in number upon the glass surface as the distance from the rubber increases

This movement of the leucocyte is clearly independent of chemiotaxis and no elaborate theory is necessary for its explanation it simply means that the natural tendency of the leucocyte is to emigrate, and this is probably carried on as much over a glass surface as over the rubber one, but in the latter case the leucocyte likes the surface and adheres to it while in the former case, as we know from experience, the leucocyte is very easily removed by washing

In the first part of this paper we were presented with the difficulty of the "citrated" leucocyte emigrating two times as much as the defibrinated one and with Pouder's method the exact reverse takes place, the citrated leucocyte does not adhere to glass at all while the defibrinated one emigrates as readily as the freshly drawn one The citrated leucocyte's emigration in the former case was extensive because the viscous condition of the blood produced by citrate of sodium allowed centrifugalization to arrange a great number at the top of the red clot (white leucocyte line), and, like all the normal kingdom leucocytes will move farther and in more dense formation when they are in company than when few in number When no centrifugalization was employed the two kinds of leucocytes emigrated equally The fact that the citrated leucocyte does not adhere to glass is no evidence of incapacity to emigrate but only incapacity to adhere to that particular surface The same result is obtained when a little water is mixed with freshly drawn blood the leucocytes will not adhere to glass but will emigrate on to a rubber surface as extensively as the same leucocytes when unmixed with water

We may therefore consider Pouder's phenomenon as evidence that the leucocyte possesses tactile sensation that it can discriminate between surfaces and has a preference for minutely irregular surfaces This tactility, though closely associated with emigration is an independent attribute of the leucocyte

On the other hand the adhesion of the leucocyte to different surfaces may be a purely mechanical process and this theory explains the action of water and citrate best for both these agents affect the envelope of the leucocyte Celluloid will adhere to glass but comes off when placed in water rubber will adhere to glass through all vicissitudes and celluloid will adhere to rubber The natural envelope of the leucocyte may be like celluloid but this does not explain why

some of the [illegible] washing, unless we advance a [illegible] theory that the [illegible] to the glass [illegible] is proportional to the sensitiveness [illegible] leucocyte [illegible] upon the glass surface the leucocyte becomes [illegible] adherent to it

Gumm [illegible] in describing the result to be obtained from the fresh distilled water [illegible] of Experiment 4 because it turns [illegible] the nature of the glass surface and the (infinitesimal) amount of solid matter that is present even in freshly distilled water The leucocyte [illegible] not like the glass surface of the ordinary microscopical slide and will therefore attach itself to any inert material in its proximity and so produce a concentration of leucocytes at the edge of the dried deposit, but if we use a surface—like rubber—that the leucocyte fancies it will take little notice of the medium of inert matter and a uniform emigration of leucocytes will result No better evidence of the sensitiveness of the leucocyte could be given nor would there appear to be any limit to the delicacy of this reaction in which it is used except that due to imperfect technique or mal interpretation of results

Method in which Prolonged Absorption is used

This method depends upon the fact that the leucocyte does not emigrate except at a temperature of about blood heat and in the experiment below, the blood in the first case was dropped upon the slide (warmed) and incubated in the moist chamber *at once* while the second slide with blood drawn at the same time was kept in a cool place for two hours and then incubated Another slide left in the cool incubator for six hours gave practically the same result Each slide was made from the same progressive dilution of staphylococcic emulsion

Method of Prolonged Absorption

(1) The circles represent the area of the dried deposit

(2) The signs , + ++ +++, represent the relationship of the number of leucocytes upon the surface of the dried deposit as compared with those on the surface of the slide outside Where applied to the circle itself the outer concentrated ring of leucocytes is indicated

(3) The dried deposits were made from a progressively diluted emulsion of staphylococcus

In the first slide there was a slight anasla in all dilutions otherwise there was no definite sign of the blood being in contact with poison at all and the leucocytes even appeared upon the surface of the dried deposits In the second slide there were evidences of "positive induced effects" in every case from the concentrated emulsion to the millionth dilution

A short period for absorption should be allowed in all experiments upon dried deposits But this subject will need further investigation, as it is possible that other factors are at work, such as the interaction of antigen

[illegible] bacteria of saprophytic [illegible] in chemical poisons.

DILUTION	INCUBATED AT ONCE	INCUBATED AFTER 2 HOURS	DILUTION.	INCUBATED AT ONCE	INCUBATED AFTER 2 HOURS
Emulsion (C)	−	+	1 in 10 000	−	+ + +
1 in 10	−	+ + +	1 in 100,000	=	+ + + +
1 in 100	=	+ + +	1 in 1000 000	=	+ + + + +
1 in 1000	−	+ + +	1 in 10 M	=	+ +

DIAGRAM 2

Other Methods to which Pondus Finding is Attributable

The method described above in detail may be called (1) the "dried deposit" method and associated therewith is (2) testing the absorption from the same. The poison may be introduced directly into the blood (3); and we may use defibrinated blood (4) while the (5) tactile sense of the leucocyte may be investigated by providing different surfaces of a standard nature (tactilometer) (5).

(1) *Introduction of the Poison directly into the Blood.*—This should give a comparative standard of the toxicity (leucocytic) of different fluids but the effect would have to be estimated upon a surface favourable to the leucocyte. In the following experiments rubber was used, and the slide was kept in a cool place for a short period after the blood was impregnated. The counts were so regular that one field gave an accurate estimate for the whole area.

Nature of blood	Number of leucocytes on M. 411
(1) Blood alone	90 leucocytes
(2) Blood 99 vols. liq. strych. 1 vol.	28
(3) Blood 9 vols. liq. strych. 1 vol.	11

Tested in this way an equal volume of water added to the blood does not appear to influence the leucocyte's activity.

(2) *Use of Defibrinated Blood.*—This may be prepared by gently oscillating freshly drawn blood in a watch glass test tube. Or the vessel may be attached

to a shaking machine and kept moving during the period of coagulation. Place a medium of this blood between two slides separated by plastic [illegible] and incubate. The leucocytes move on to the lower slide but not to the upper one showing that Ponder's phenomenon is independent of the fibrinous staging of a clot, but will not take place against the action of gravity. The leucocyte in this form is useful for observations upon absorption and serological changes in connection with dry deposits where blood temperature is required because the position of the slides may be reversed at any stage of the incubation and the activity of the leucocyte estimated for the period of time that the slide is in that position.

FIG. [illegible]

[illegible] THE [illegible] OF THE [illegible] THE [illegible] VI [illegible] THE DRIED [illegible] A [illegible] DEEP DROP OF [illegible] A LEUCOCYTE [illegible] FIGURES [illegible] QUADRANTS

[illegible] of the [illegible] present [illegible] differ [illegible] of [illegible] (2) the [illegible] between the [illegible] surfaces [illegible] the central [illegible] represents [illegible] of concentration depend [illegible] the glass [illegible] the slide [illegible] show [illegible] the [illegible] on iron [illegible] so for IV showing [illegible] the depth [illegible] the adjustment [illegible] the [illegible] Thus [illegible]

Demonstration of the Deposit Effect by a Dried Drop of Fluid with Some Considerations of the Phagocytic Of the Method Recommended

We have seen that the leucocyte possesses a tactile sensation in some [illegible] than to it, and that it is possible to produce surfaces that it files or [illegible] but we can hardly conceive of a particular surface or particles of

[illegible] it is [illegible] Chemotaxis must [illegible] be due to soluble matter, even [illegible] and the leucocyte appears to appreciate the minutest flavour just as it is attracted by the minutiæ of particulate matter

The most soluble salts when in the form of dried deposit do not appear to be affected by the simple procedure of dropping blood upon them, and if not absorbed into the clot may be washed away by the subsequent proceedings and result in an areola of negative emigration, which, as will be seen, is of no diagnostic importance

[illegible]

(1) *Uniform [illegible] Deposit*—This may be obtained by using a diluent containing [illegible] particles like powdered glass where after staining, the leucocytes may be brought into view by dropping oil upon the deposit and making a comparative count of those upon the slide surface and the deposit

(2) *Natural Dried Deposit*—This appears to be the best procedure although making [illegible] of results more difficult [illegible] represents the dried deposits of progressively diluted (1 in 10) carbol fuchsin upon a celluloid surface It was printed directly on to sensitized paper

The more dilute solutions give a thin film in the centre with a distinct ring of dried deposit at the outer edge This is the configuration of Diagram 3 and the results obtained by diluting fluids or emulsions with fresh distilled water Containing the fluid within cell walls has no advantages over this method for the surface resistance of rubber limits the area of the drop in a uniform manner

Interpretation of Results obtained from Incubating a Drop of Blood placed upon Dried Deposits of Measured Quantities of Fluid

No difficulty will be experienced in reading the results of this complex phenomenon if the attention be concentrated on the essentials which are —

(1) *Negative Induced Effect (N I E)*—This is where the poison enters

the clot and inhibits the action of the [illegible] leucocytes [illegible] produced, as illustrated in [illegible] shown practically in the arsenical slide [illegible] Unfortunately it may be confused with areolas produced in other ways, which makes it necessary for the novice to take this evidence from a superimposed slide and not from the slide which contains the deposit (see p. 291). This areola of N I E depends upon (1) the rate of diffusion of the poison through the clot, (2) the length of time the deposit is associated with the same, and is of interest as a mark of the stage of dilution of the poisonous material, especially in the case of chemical agencies.

(2) *Positive Induced Effect (P I E.)*.—This is a definite increase in the migratory activity produced by a poison at certain dilutions and may be taken as evidence of the presence of that poison if it be done upon a surface that the leucocyte likes. In the diagrammatic representation of this phenomenon it will be noticed that this effect is produced upon the thin film of the dried deposit earlier than in the case of the concentrated ring of the same (compare Sector IV with Sector VII of Diagram 3). This is because the poison is more concentrated in the latter than in the former. Distilled water that has stood for some time and contains bacteria gives a concentration of leucocytes at the edge (Experiment 2).

Practical Application and Technique

Ponder's phenomenon is not a measurement of emigration of the leucocyte but a measurement of its (?) tactility or capacity to adhere to different surfaces. The relationship is somewhat similar to that of phagocytosis and measurement of opsonic power of the blood. Opsonins cannot be measured without phagocytosis and emigration over the glass surface is necessary for the leucocyte to decide whether it likes it or not.

The other factor affecting practical experimentation of blood-clots upon dried deposits is *absorption*. Both these subjects require further investigation, but the simple rule of using gutta-percha or rubber slides and keeping the blood-covered deposits in a cool place for one hour previous to [illegible] should give consistent results.

(1) *Glass Slides*.—These may be used as the top slide in estimating the [illegible] of N I E with advantage and can be used in a general way if it is [illegible] that it is a surface that the leucocyte does not like. If rubbing [illegible] with wash-leather will prevent a dried deposit of the diluent giving [illegible] concentrated ring of leucocytes they may be used for estimating the final result by dilution. They are of no use when estimating the effect of introducing the poison directly into the blood.

(2) *Method of Coating a Slide with Rubber, &c.*—Dissolve 5 grains of gutta-percha tissue in ½ oz. of chloroform in a wide mouth stoppered bottle that will hold a slide (bottle used for keeping slides in alcohol). Place a dry slide therein and shake the contents over the surface then allow to

[illegible] for ten [illegible] [illegible] [illegible]

(c) *Practical Procedure*.—Accuracy of result is obtained by dilution rather than strict detail of method and it is important to keep the latter as simple as possible. It is better to test a 1 in 5 dilution (progressive) in a simple manner than a 1 in 10 with all accuracy of detail and the simple technique given in the first few experiments is quite good enough for ordinary purposes.

(b) *Standardisation of Results of the Estimation of Toxicity (Leucocytic) of Different Fluids*.—Ship's water, that had been standing in a bottle for some time and obviously contained bacteria growing naturally, was tested as follows. Progressive dilutions were made with water fresh from the condenser and uniform drops placed upon a rubber covered slide, dried and covered with drops of blood. The slide was kept in a cool place for two hours and then incubated. The drop of bacterial water itself showed P.I.L. over the central film and there was a double row of leucocytes at the edge of the dried deposit. These signs gradually faded away in the successive dilutions till we arrived at 1 in 42 which gave much the same picture as the diluent and could be designated the end result. I should consider that this is the limit of toxicity (leucocytic) that water in bound should be allowed to go and that any distinct evidence of ring formation in the drop of the water itself should lead to inquiries as to the water being stored for too long a period, but it is too early to lay down any arbitrary laws.

The same procedure was adopted with respect to fresh milk that had been on board for a day or so, where a very different story was unfolded. The (1 in 1,000,000) dilution still gave evidence (+ + i.e. two rows of leucocytes) of increasing P.I.L. at the edge of the dried deposit which developed into + + + at the next dilution of 1 in 10,000,000, showing that the end result of dilution had by no means been arrived at but (one would think) enough to show that the milk should be condemned.

Fluids containing bacteria should be tested by this method of dilution either to the very end or to a stage at which the dilution may be estimated but in the case of chemical poisons perhaps the areola at N.I.E. obtained in an approximated slide would be the best indication, with the alternative of noting the effect of direct introduction into the blood. In the case of fluids of unknown contents the results obtained by the two former methods would probably indicate the nature of the poison, whether of chemical or bacterial nature.

In conclusion, I must apologize for neglecting the more academical problems of the latter part of my first paper, and may be excused for just noting a method by which emigration independent of surface conditions can be obtained, and in which blood freshly drawn from the finger may be used.

Draw out some capillary tubing (after flaming) as fine as possible and break off an inch from the wider part of the tube, then insert the other end into the apparatus for rapid dilution (see p. 293). Lay aside and obtain

[illegible] artificial coagulating, plasma [illegible] this up into [illegible] tube taking care to stop the su[illegible] ing it from [illegible] surface of the fluid. Now repe[illegible] freshly [illegible] and suck up slowly. If proper [illegible] the two [illegible] found to be laying in juxtapo[illegible] allowed [illegible] that position. Incubate. [illegible] and [illegible] water. Remove the red clot [illegible] the [illegible] which is bound to be of slight [illegible] small [illegible] leucocytes at the junction of the [illegible]

Conclusions

(1) [illegible] phenomenon is not a tra[illegible] activity of the leucocyte. It may measure the [illegible] the leucocyte by [illegible] method [illegible] by recording the [illegible] leucocytes that have become adherent to a glass surface through [illegible] upon it.

(2) Leucocytes may have some degree of tactile [illegible] by which they attach themselves to minutely irregular surfaces such as bacteria, rubber, &c.

(3) Bacterial emulsions and other fluids may be tested as to their toxic effect upon the leucocyte by means of Wright's adaptation of Ponder's finding, if absorption into the clot from the dried deposit be allowed for and the relationship of the leucocyte to different surfaces be taken into account.

(4) Further elaboration of this method should provide us with a simple universal test of toxicity (leucocytic) applicable to practically all the fluids &c. associated with pathology, pharmacology, hygiene &c.

(5) The accuracy of the method adopted should be verified by more academic methods, such as (1) emigration upon the staging of the white clot, (2) phagocytosis &c.

SOME MISCELLANEOUS FORMS OF CEREBROSPINAL FEVER ASSOCIATED WITH PURPURA

[illegible] BURNS, M.D., [illegible]

[illegible] *Royal Hospital, Plymouth*

[illegible] *Revue de Médecine* [illegible] Cerebrospinal Meningitis [illegible] infection other than [illegible] of Zinsser [illegible] Netter's coccobacillus [illegible] form is becoming more [illegible] patient [illegible]

Ra[illegible] later by meningitis the prognosis more [illegible] simultaneously (one recovery in six cases) there [illegible] development of vesicles and bullæ in the [illegible] The bullæ and vesicles [illegible] prominent leading to ulceration, [illegible] appears most commonly on parts [illegible] elements which are some [illegible] simulating those of measles [illegible] *coccus cannot always be solated* but may sometimes [illegible] over petechiæ, in the blood or in the cerebrospinal [illegible] the meningococcus was not found the diagnosis [illegible] agglutination test. Failing bacteriological confirmation [illegible] "meningococcæmia" may be established by the history of [illegible] cases of cerebrospinal meningitis the occurrence [illegible] to exclude suppurative arthritis and endocarditis and [illegible] only intrathecal administration of polyvalent serum [illegible]

[illegible] that the diagnosis was confirmed in one of Netter's [illegible] test. In the following series however this test [illegible]

[illegible] in the present article is a small series of [illegible] purpura associated with meningitis which [illegible] ship [illegible] weight in the winter months [illegible] tabulated summary is given. Although [illegible] was wholly absent in three cases, although the [illegible] visible change in seven cases and although [illegible] only in three cases out of the [illegible] prevalence of stained blots only [illegible] shall [illegible] forward the reasons for regarding the [illegible] of the same infective disease [illegible]

[illegible] the individual cases I append a short

[illegible] Medical [illegible]

[illegible] condition of [illegible] diseases [illegible] of small [illegible] blood condition [illegible] money. Under [illegible] comparatively [illegible] hemorrhages into the skin [illegible] disturbances [illegible] joints.

The [illegible] in the tabulated [illegible] (1) Infectivity (B) Clinical [illegible]

(A) *Infectivity.*—The [illegible] outbreak within five days from December [illegible] in which the cases [illegible] and the [illegible] tions in three out of the six cases were [illegible] the beginning that we were dealing with [illegible] After the seventh case which occurred [illegible] occurred sporadically—two in January [illegible] Much one in April and two closely together [illegible] the prompt preventive measures [illegible] to a large extent to the sudden [illegible] Case No. 2 contracted the disease [illegible] the slight characteristic feature of erythrophyll [illegible] ly that many of the cases were new arrivals in the [illegible] Its infectivity therefore both the epidemic and [illegible] teristic of cerebrospinal fever are well illustrated.

(B) *Clinical.*—Taken as a whole [illegible] can be seen to pervade the whole series [illegible] stages. These were: *Gastro-intestinal disturbances*—[illegible] vomiting; *slight respiratory catarrh*—[illegible] number of faces and cyanosis were symptoms [illegible] in which cases); *characteristic rash* coming on the first [illegible] till the second or third day of illness then fading slowly [illegible] generally hemorrhagic although petechiæ and [illegible] occurred; the larger elements showed a tendency to vesiculation and this was often followed by suppuration ulceration and scarring [illegible] the legs; *fever associated with headache and malaise.*

Taken individually *with the exception of* Cases No. [illegible] of the series fall readily into three clinical groups:—

(a) The definitely meningitic. (1) Acute without purpura [illegible] No. 10 and 11. (2) mild with purpura Nos. 6, 13 and 14.

(b) Transitional forms (not distinctly meningitic but presenting [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible] Vomiting [illegible] 4 days [illegible] Very fateful [illegible] throwing on [illegible] face and [illegible]
[illegible]	[illegible]	[illegible]	Mild symptoms chiefly fever first few days transient stiffness neck and limbs. Occasional headache. 6th day acute meningitis. [illegible] treatment. Morphia given freely
		[illegible]	[illegible] at autopsy)
[illegible]	[illegible]	[illegible] headache [illegible]	[illegible] slight frontal headache transient neck stiffness. Extremely mild
		[illegible]	weeks
[illegible]	[illegible]	[illegible]	Acute meningitis 2nd day. Highly irritable. Forcibly resisted examination. Did not recognize mother 3rd day. Convalescent from 5th day
		[illegible] complications [illegible]	[illegible] month
[illegible]	[illegible]	[illegible] hours	Marked [illegible] signs at 8 hours. Better on 2nd day. Mental condition normal 4th day followed by rapid recovery
		[illegible] three weeks.	(Evidences of [illegible] still showing
[illegible]	[illegible]	[illegible]	Fever for 3 days and multiple joint effusions of transient character. Pain and heat in joints involved generally followed by swelling
		[illegible] four weeks.	(Evidences of [illegible] still showing [illegible]
[illegible]	[illegible]	[illegible] headache [illegible] vomiting	After 16 hours January 18 passed rapidly into dull stuporous condition. Pulse and respirations increasingly feeble. Cyanosis and incontinence. Meningitic signs indefinite
		[illegible] hours after admission	to hospital (within 22 hours of first onset)

Type and rash and date of appearance	Complications	Cerebrospinal fluid	Treatment and results
Fine purpura in 12 hours	(2) Thrombosis in mesenteric 26th day (2) Pneumonia following and lasting weeks	Normal	Tonic treatment quickly. Calcium and salicylates given without apparent benefit
Fine purpura in 24 hours (fine and numerous in body—)	(1) Acute joint inflammation 7th day both elbows affected (2) Pleural effusion on 8th day	Pressure slightly increased, otherwise normal	(1) Cordes's polyvalent serum intrathecally on 8th day (2) Blood 250 cc. intramuscularly 10th day; pain still severe, relieved by morphia and pyrogen (3) Serofibrinous effusion of right pleura
Fine purpura in 12 to 24 hours. Morbilliform and erythematous features	Nil	Normal till 6th day (lumbar puncture on 4th and 6th days). 6th day Tested more and more steadily. Pressure never high	(1) Lederer's fluid intravenously 10 cc. under skin. 8th day (2) 6th day. Calcium chloride 10 cc. intramuscularly 9th day. Plasma injection intravenously
Meningococcus	Type X (as above)	Also a Streptococcus isolated from culture of cerebrospinal fluid	
Purpura and urticarial rash on chest	Nil	Pressure increased, otherwise normal	X
No rash	(1) Acute diarrhœa 6th week followed by 6th week by pain in back and loss of weight, neurotic (?) neck 11th week (2) Slight bronchitis 6th weeks	(1) Clear, high pressure (2) Opalescent, high pressure	[illegible] decreased in the [illegible] certainly [illegible] discharge [illegible]
Fine purpura from 6 hours increasing up till 24 hours	Nil	(1) Opalescent, high pressure (2) Normal	[illegible]
on legs at first, neck [illegible] swelling of skin)			
Fine purpura from 12 to 24 hours [illegible]	Left elbow joint swollen and tender to distal end of humerus. Swelling subsided [illegible]. Mouth [illegible] panied by some [illegible] muscular symptoms	Normal	[illegible] joint [illegible] Migraine and [illegible] from 12th day
[illegible] swelling of skin)			
Purpura and [illegible]	Nil	Normal in appearance and pressure	[illegible] under skin [illegible] Camphor [illegible]
	Meningococcus Type X obtained from culture of cerebrospinal fluid		

[illegible]	[illegible]	[illegible]	[illegible]	[illegible] joints. Mental [illegible]
[illegible] herpes	[illegible]	[illegible]	[illegible] ing [illegible] pos [illegible] Cerebr[illegible]	[illegible]
Complete [illegible] weeks				
[illegible] meningitis 20 pm [illegible] herpes	Feb 27	[illegible]	[illegible] on admission [illegible] hours. [illegible] rise of urine [illegible] [illegible] hours. Sth [illegible]	
Complete recovery within three weeks				
(12) Purpura with meningitis (cf Case 9)	April 10 (admitted April 11)	Sore throat six days [illegible] 7 hours pains in legs and vomiting	Mental [illegible] Kernig's sign positive. Mental [illegible] vomiting [illegible] of urine and [illegible] in first 24 hours	
Complete recovery in six weeks.				
(13) Meningitis and purpura	May 1	Malaise headache [illegible] sore throat [illegible]	At 1 hours mentally dull headache no rank stiffness Kernig's sign positive full leg Temperature 102 6° Slight cyanosis. 2nd day Temperature normal neck stiff Kernig's sign positive 3rd day Much improved rheumatic pains right elbow and shoulder no ab positive signs All disappeared on 4th day	
Complete recovery within three weeks				
(14) Meningitis and purpura	May 4	Sore throat [illegible] headache [illegible] in legs vomiting (Had felt ill some hours before reporting himself)	Slight frontal headache but no other meningeal signs Ill 30 hours from onset. Signs [illegible] with marked torpor and drowsiness Marked neck stiffness [illegible] following day Slight headache Very rapid improvement followed treatment	
Complete recovery within three weeks				

Type of rash and date of appearance	Complications	[illegible]	[illegible]
Free purpura on 12th-24 hours. Large confluent patches on legs. Reached max. on 3rd day	(1) Acute conjunctivitis at the end of eighth day and involving loss of sight in 4th week. (2) Haemorrhagic Septicaemia. Ulceration and bleeding of large haemorrhagic patches on legs. Last ulcer healed 12th week	[illegible]	[illegible]
[illegible]	Nil	[illegible]	[illegible]
Hemorrhagic purpura very high. Severe [illegible] 8th day. Total illness in [illegible] 48 hours but [illegible]	Nil	[illegible] very high. Severe [illegible]	[illegible]
	Meningococcus	Typ[illegible] Neisseria isolated from [illegible]	[illegible]
[illegible]	Electrical [illegible] up [illegible] and scar in [illegible] large hemorrhagic patches on the legs. Ulcers not healed till 4th week	Normal [illegible] pressure [illegible] 7 [illegible] lumbar puncture all cold fluid sterile	[illegible]
[illegible]	Nil	(1) Opales [illegible] (2) Smoky [illegible] (3) Clear pressure (4) Clear pressure normal fluid [illegible]	[illegible]
[illegible]	Nil	(1) Turbid [illegible] (2) Turbid [illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

or slight meningitic manifestations and profuse purpura), Cases [illegible] 12, 2 and 8

(c) Non-meningitic forms—purpura only—Cases Nos 1, 11 and [illegible]

(Unclassed—Case No 3—characters of group (c) for the [illegible] meningitic from sixth day.)

(a) *Meningitic forms* (1) The two cases included under this heading Cases Nos 11 and 12 were the only typical examples of [illegible] epidemic fever in the whole series Neither case presented any appreciable rash the cerebrospinal fluid was very turbid at first but cleared up after the seventh punctures respectively and herpes catarrhalis occurred abundantly in both cases (A free hemorrhagic eruption appeared in [illegible] the formation of herpes as it was absent in all the remaining cases of the series)

(2) The four cases included in this sub heading (Nos 1, 6, 13, 14) resembled one another in that, though definitely meningitic for a time and showing purulent changes in the cerebrospinal fluid they cleared up with unusual rapidity A profuse purpuric rash out of all proportion to the symptoms, was present in three cases (Nos 6, 13 and 14) and it is noteworthy that it was most free and persistent in Case No 6 which was the oldest of this group Case No 1 although presenting no rash whatever developed unusual complications during convalescence and one of these—angio neurotic œdema—would tend to show that this case was also allied to the purpura (Osler and McCrae, iv 681 716) All four cases also presented the common initial symptomatology referred to above by which they were allied to one another and to the remainder of the series

(b) *Transitional forms* (Not definitely meningitic but yet presenting marked or slight meningitic manifestations and profuse purpura with no apparent change in the cerebrospinal fluid.)

The four cases in this group run in pairs, Nos 9 and 12, and Nos 2 and 8 being closely allied individually while taken as a whole they appear to form a connecting link between the cases in Groups (a) and (c)

Cases Nos 9 and 12 In these two cases the rashes were almost identical and in both very profuse Both cases presented headache and neck stiffness for a few days and in both an increase in pressure in the cerebrospinal system was demonstrated by lumbar puncture although no marked eye change was apparent in the fluid These signs were more definite and persistent in Case No 12, but on the other hand Case No 9 developed the severe eye complication involving the loss of an eye which is greatly emphasized by Netter as diagnostic of the purpuric form of cerebrospinal fever

Cases Nos 2 and 8—Both these cases were highly acute. Case No 8 was fatal within twenty two hours of onset, Case No 2 eventually made a good recovery Neither case presented any change in appearance or pressure in the cerebrospinal fluid Both presented cyanosis a dull mental condition and fæcal incontinence and in both vomiting was a prominent

[illegible] and fourth days) Headache [illegible] was not appreciable and [illegible] In [illegible] post-mortem revealed an early suppurative condition of the meninges which was proved by the bacteriologist to be meningococcal in origin

(c) *Non-meningitic Forms Purpura only* —There was no bacteriological evidence in these cases on which to base a diagnosis, but they were returned as cerebrospinal fever and not as examples of arthritic purpura for the following reasons They were definite units in the outbreak and were closely associated with the meningitic and transitional forms both epidemiologically and clinically (Compare Case No 8 also, which was typical of the non meningitic cases for five days and acutely meningitic from the sixth day) A degree of infectivity was illustrated which harmonized with that known in cerebrospinal fever Infectivity is not referred to in connection with purpura The development and clinical course of the rash in these three cases and in fact in the whole series, closely resembled that seen in the exanthemata It appeared within so many hours of onset passed on to a maximum and then gradually began to fade The eruption of purpura runs an irregular course and has a tendency to recur (Fever occurred in all cases) The remarks made about the rash apply equally with regard to fever whereas purpura is generally afebrile The tendency to the formation of vesicles was apparent in Cases 1 and 7 of these non-meningitic forms, and also in Cases 6 9 and 12 of the meningitic and transitional groups Nettar notes that the tendency is more common in the meningococcal than in other forms of purpura

Case No 4—Owing to the fact that this patient was non meningitic during the first five days of his illness, and then suddenly developed acute meningitis on the sixth day, he could not be included in any of the above three groups This case and No 4 were almost identical as regards symptomatology during their first few days of illness The rashes in both cases exhibited urticarial and erythematous characters in addition to the purpuric, but while sparse and scattered in Case No 4, it was copious and generalized in Case No 3 Both cases exhibited transient headache and neck stiffness in the first few days In both the cerebrospinal fluid was normal in appearance to the naked eye though in Case No 4 there was distinct increase of pressure as shown by lumbar puncture On the sixth morning of illness however Case No 3 had become acutely meningitic, the cerebrospinal fluid though not showing high pressure at any time, became increasingly turbid the symptoms became more and more acute and death took place on the tenth day of illness *This issue was complicated by the finding of a mixed meningo- and streptococcal infection of the meninges* (See under 'Bacteriology of the Epidemic)

In summing up the clinical aspect of the series, two distinct types of the disease are represented —

(1) The typical meningeal type (Cases Nos 10 and 11) in which the inflammation was more or less localized in the meninges

(2) The purpuric or [illegible] described by Nett[illegible] which there was consid[illegible] influence ass[illegible] in nine cases out of twelve [illegible] clinical symptoms.

The two types were [illegible] the infectio[illegible] the finding of the meningococcus [illegible] (referred to later) in the m[illegible] acute cases in each type.

(C) *Bacteriology of the Epidemic.*—The results of the bacteriological examination of the cerebrospinal fluid, the naked eye appearances of the fluid, and a rough estimate of its pressure are appended below in tabular form (under the heading 'Pressure' + + + denotes very high pressure 40 c.c. and upwards shooting off rapidly; + + denotes high, over 30 c.c. and under 40; + denotes increased pressure over 20 c.c. and under 30, "n." denotes normal the fluid coming off drop by drop).

	Case number	Number of cells	Pressure	Naked eye appearances of fluid	Bacteriological results: Stained films	Bacteriological results: Culture
Epidemic	10	5	+ +	Turbid	Neg	Neg
	11	7	+ + +	Turbid	Pos	Pos
	14	4	+	Turbid	Pos	Neg
	13	4	—	Opalesc	Neg	Neg
	6	2	n.	Opalesc	Neg	Neg
	5	2		Clear opalesc	Neg	Neg
Non-epidemic	1	2	+	Normal	Neg	Neg
	12	9		Normal	Neg	Neg
			+	Normal	Neg	Neg
	9	1	+	Normal	Neg	Pos
	4	1	+	Normal	Neg	Neg
	1	1		Normal	Neg	Neg
	2	1	+	Normal	Neg	Neg
Non-epidemic Cases	7 (Still alive)	3		Normal	Neg	Neg
	From 6th day—4			Increasingly turbid	Pos (Mixed meningo. and streptococcal infection)	Pos

It will be seen from the table therefore that only three cases of the [illegible] positive cultural results (Nos. 11, 8 and 3) and that one (Case No. 11) was positive only in stained films of the uncultured fluid. In Case No. [illegible] the meningococcus evaded isolation in the initial stages of the [illegible] and its appearance after the sixth day would appear to be in some way associated with the simultaneous appearance of the streptococcus. *A striking feature about the meningococcus isolated in all three cases was the fact that it failed in every case to agglutinate with any of Gordon's four typing sera.* (This finding was confirmed by Deputy Surgeon-General P. W. Bassett-Smith, C.B., R.N.)

No meningococcus exhibiting this peculiarity of agglutination was discovered in association with cases of the disease admitted from other sources than H.M.S. "Powerful" in 1916. It would appear therefore that the unusual characters of the outbreak were in some way due to an unusual type of meningococcus. The difficulties experienced in isolating it might be explained on the supposition that it possessed cultural peculiarities as yet undiscovered. Whatever the source of the strepto

[illegible] Case No [illegible] in [illegible] is probably [illegible] [illegible] infection In contrast to the findings of [illegible] cultures of the fluid [illegible] from [illegible] and otherwise) in the skin all nasopharyngeal cultures and the agglutination reactions were negative of results

No positive nasopharyngeal swabs were obtained from any case in the series while in hospital Case No 5 became a carrier two months after leaving hospital No carriers were found among the contacts

Among the various media and methods employed for blood cultures were large agar plates and plates of blood glucose agar several being used in each instance the blood being inoculated direct In Case No 8 for instance, one felt more or less justified from the symptomatology in concluding that a meningococcal septicæmia was present as in every other case in the series the blood culture was sterile Although blood cultures are often difficult to obtain even with a readily cultured organism like the *B typhosus* one is forced to the conclusion after so many negative results that the non-meningitic and purpuric manifestations in those cases were evidences of a toxæmia and not of a septicæmia

The following then, is a summary discussed under the three heads of the evidence on which is based the diagnosis of cerebrospinal fever —

(*A*) *Infectivity* —The same infective characters are presented by this series of cases as are so typical of cerebrospinal fever

(*B*) *Clinical* —The cases form such a complete clinical chain from the mildest to the most acute that every single case has got to be looked upon as an essential unit which helps to prove the whole

(*C*) *Bacteriological* —The bacteriological evidence is very incomplete, but a meningococcus with unusual characters is discovered in association with the three most acute cases of the epidemic

My conclusions also of the epidemic are —

(1) That the non meningitic and transitional forms are the same type of the disease to which Nutter refers in his article, and that all are examples of cerebrospinal fever

(2) That, excluding Cases Nos 10 and 11 which were typical meningitic forms the other twelve were unusual and exhibited manifestations of a marked toxæmia

(3) That in addition to toxæmia a mild meningeal inflammation was superimposed in certain cases, notably Nos 11, 13, 6 and 5 arranged in order of diminishing severity

(4) That the absence of the meningococcus in such mild non meningitic types as Nos 7 4 and 1 is not surprising when it could not be found in such definite clinical examples of the disease as Nos 10, 14, 1 [illegible] 6 and 5 where the meninges and cerebrospinal fluid were infected

(5) Finally that the unusual features of the disease were in some way associated with an unusual type of organism and, further, that the infection was of an unusually mild nature

A ROUTINE TREATMENT OF ACUTE LOBAR PNEUMONIA.

By Staff Surgeon C A G Phipps R N

The most striking feature of the text-book method of dealing with the treatment of acute lobar pneumonia is the great variety of the drugs and medical treatment set forth. The treatments range from those of the [illegible] description involving almost a do nothing policy to those of the most elaborate description

In fact after a close study of the text books one feels better qualified to engage in a controversial discussion at a medical meeting than to enter upon the treatment of a large number of pneumonia patients in a hospital ward

Many medical officers would deprecate a routine system of treatment as impractical and unscientific but in my opinion a routine treatment fully varied as necessary to meet individual cases has some advantages, especially when dealing with a large number of cases

In this paper I do not intend to enter into any discussion of the various drugs and methods used in the treatment of this disease but to indicate the treatment that was used in the acute medical ward of the Royal Naval Hospital at Chatham during the two years I was there The mortality of lobar pneumonia in the Royal Naval hospitals is not high compared with that in civil hospitals—the reason, no doubt being that in the Royal Navy the destitute dissipated, and aged patients can be eliminated Naval cases afford the best material for withstanding a pneumonic attack I should like to call attention to the fact that the presence of recent secondary syphilis is usually serious, and greatly minimizes a patient's chance of recovery

General Management

When the patient was comfortable in bed, shortly after his arrival in the ward, I always made a careful examination of his lungs and heart so that I need not again disturb him Lengthy examinations are injurious and unnecessary it can only be of academic interest to ascertain the physical signs that are present in the lungs during the later periods of an attack

The ward should have plenty of fresh air and light the patient should be warmly clad, the flannelette pneumonia jacket being quite sufficient extra clothing for this purpose, and this should not be pinned so tightly as to embarrass the breathing The head of the bed may with advantage be raised six to eight inches from the floor A good many patients are very apprehensive about their condition and the medical officer should endeavour to set the minds of these patients at rest My plan with a nervous patient was to direct his attention to a convalescent patient in

the wind, [illegible] in the convalescent one [illegible] though a very much worse attack, and that there was no reason why [illegible] should not do the same. The patient who does best is the sthenic case. The asthenic will cause great anxiety to his attendants before and after the crisis, also he is the type of case that develops various complications and sequelæ.

The food should consist of milk or thin Benger's food, which can be flavoured by the Sister with various essences to suit the patient's taste. Plenty of natural lemonade is usually much appreciated by the patients. In those cases where the sputum is very tenacious and difficult to get up the lemonade may be given hot with a few grains of bicarbonate of soda.

Care of the mouth is most important. If the patient can do so he should use a carbolic acid gargle after each feed, but if he is unable to gargle the attendant should gently sponge out the mouth with a swab of wool soaked in glycerine of carbolic acid. After the gargle, his lips should be painted with glycerine flavoured with lime juice.

The spitting pot should contain a 1 in 1,000 solution of perchloride of mercury. The attendants should take care not to let the sputum dry on the bed linen or elsewhere. Careful nursing and attention to small details are of great importance and greatly assist towards a successful case.

TREATMENT.

I propose here to indicate the treatment under two heads: (1) medicinal, (2) vaccines.

(1) *Medicinal Treatment.*—The best guide as to how the patient is progressing and how the medicines are acting is the pulse. The treatment adopted and the one I wish to advocate might be called graduated stimulation. As pneumonia is a self limited disease lasting about a week it is the medical officer's duty to assist the heart to withstand the strain for this period. The strain on the heart gradually increases up to the crisis, so that at the crisis we want the drugs to be exerting their full strength. Stimulation if it is to be of any real value must be sustained. For instance, it is of little use to give a patient stimulants three times a day and leave him to do the best he can during the night whether sleeping or not.

For this reason it is advisable to order stimulants every four, three, two hours, or hourly, according to the condition of the heart. Care must be taken not to over stimulate, or the heart gets into a condition when it no longer responds to medicines. The question of stimulation is often a very difficult one, and experience can only be gained at the bedside. A good deal of experience is sometimes required to enable one to decide when to increase the dose of the stimulants, but if the medical officer can constantly watch his patient so as to guard against any false idea of urgency and so commence increased doses too early, there should be very little difficulty. In an early case a dose of calomel and salts will be found of use in preventing subsequent flatulence, which, if it occurs, leads to serious

embarrassment of the heart and respiration The patient was then ordered a simple stimulating expectorant mixture The one used was —

℞ Ammon carb		gr v
Spirit eth nitros		ʒss
Vin ipecac		♏x
Aq ad	ad	℥j
ʒiss hourly		

If the patient's pulse was weak and tension poor, brandy in half ounce doses every four hours was commenced early so that on the first or second day the patient was getting two four hourly medicines

On the second day if the case showed signs of being a severe one the patient was started on tinct digitalis ♏xx in ℥ss of water four hourly, so that now the patient was getting three four-hourly medicines It is advisable to commence the administration of digitalis early, as this drug does not act on the heart much under forty eight hours and so it will be acting about the fourth or fifth day, when it will be required

In many cases this amount of stimulants will be sufficient but if the pulse indicates signs of weakness and this is the period when experience in decide the medicines can be increased to one ounce and the digitalis ♏viii to ♏ii four hourly The one hour during the four in which the patient was not getting any medicine can now be used to give him either another dose of brandy or a hypodermic injection of strychnine With regard to strychnine, this drug is most useful at the crisis, but it is advisable not to give it early but keep it as the last shot in the locker When given hypodermically it acts quickly and often is of great value in preventing collapse near the crisis if the drug has been reserved for this emergency

One of the greatest difficulties the medical officer has to contend with is a delayed crisis and the question of over stimulation will have to be carefully considered The sphygmomanometer now will be found most useful

After the crisis the stimulants and medicines should be decreased slowly, watching the pulse carefully so that at the end of a week the patient will be having a tonic medicine such as strychnine and iron and a little port It is well to keep the patient in bed if possible for a month after the crisis to allow the heart to recover its tone

It seems to me to be unnecessary to labour the point in regard to variation of the doses as this will be obvious to the medical officer when looking after any case

(2) *Vaccine Treatment*—The stock vaccine used in all cases was supplied by Messrs Parke Davis and Co in strengths of 20 30, and 40 millions per c c in glass ampoules I usually gave 20 millions by hypodermic injections shortly after the patient was comfortably in bed Much has been said for and against vaccine treatment in pneumonia but experience at Chatham Hospital shows that whatever else the treatment did it certainly kept the temperature down, and therefore kept the patient

[illegible] table than be[illegible] have been [illegible] high temperature [illegible] thereby [illegible]

As the pulse was [illegible] in the [illegible] the tumulents so the temperature chart is now our best clinical guide in the administration of the vaccines

I endeavoured to keep the temperature under 104° F., and for this purpose a dose of 20 millions every other day was usually found sufficient In some cases this was not sufficient and in these cases a dose of 20 millions was given every day No bad effects were noticed from this dosage In the later stages of the disease it was often found necessary to give a dose of 50 millions but this was unusual in cases that had 20 millions daily

Vaccines do not influence the crisis in any way, neither do they decrease the time to the crisis

Vaccines are most useful after the crisis, especially in cases of delayed resolution There is an important point in connection with vaccine treatment if a large dose say 50 millions is given near the crisis a gradual rise of temperature will be observed commencing about a day after the crisis, and lasts from five to seven days This temperature seldom rises above 101 F and comes down by lysis No bad effects are noticed in the patient's condition, although it will give the medical officer some anxiety and trouble in eliminating an empyema To sum up the vaccine treatment does no harm and will keep the temperature down thereby making the patient more comfortable, so that I am in favour of their use in pneumonia

I have now indicated the treatment adopted during the attack, but I do not propose to enter into the treatment of the complications or sequelæ, this being outside the scope of this paper

I should like to express my indebtedness to Surgeon-General J J Dennis, C B M D R N, from whom I learnt most of the subject of this paper Also I should like to express my thanks to Staff Surgeon F G Hitch, R N, for many suggestions

SOME OBSERVATIONS ON AN EPIDEMIC OF SANDFLY FEVER, OCCURRING IN ONE OF H M SHIPS

By Staff Surgeon Guy E Buckeridge R N

The ship in which I am serving recently underwent a refit at an East Indian port owing to the unhealthy locality of the dockyard the officers and men were accommodated ashore during the period of repairs which was of nearly two months duration (August 9 to October 5), one watch being quartered in the local Sailors Home—in order to assist with the work on the ship—whilst the other was sent to a rest camp at a hill station The watches changed places at the end of a month.

There were several cases of what was apparently sand fly fever among the men living in the Sailors Home, but not a single case occurred among those residing at the hill station In both places the men slept under mosquito nets As I was with the men in the hills when these cases occurred in the port, I had no opportunity of studying them, so these observations will be confined to those cases which actually developed and were treated on board

The men returned to the ship on the morning of October 5 one watch coming straight from the rest camp, and the other from the Sailors Home On October 7 the first case of what was undoubtedly sand fly fever came under observation and from this date there was a small but steady daily influx of fresh cases until October 31, when the epidemic suddenly ceased In all there were thirty nine cases—distributed among the officers and various ratings in the following proportion Officers 5 marines, 5; seamen 11, engine room ratings 15 and daymen and telegraphists, 3

The ship left her port of refit on October 17 and with the exception of three days has been at sea ever since in a drier and healthier climate. For the first five days of the epidemic none of the men who had come direct from the rest camp were affected but after that period the disease was more indiscriminate in its choice of victims One other noticeable feature in the distribution of infection was that the majority of the people attacked were those who slept between decks (most of the men sling their hammocks on the upper deck) This was peculiarly apparent in the case of the five officers who contracted the disease They all had cabins on the lower deck in the after flat—an inefficiently ventilated compartment Four of these officers had contiguous cabins situated on the side of the ship most exposed to the sun not one officer who had a cabin on the main deck was affected I verified the presence of sand-flies in the ship and presume they had invaded her during the refit, as I had never seen any before that time I noticed the absence of these insects at the hill station, which

accom[illegible] cases complained [illegible]

The Symptoms—Each one of the [illegible] a replica of the others the almost [illegible] of pyrexia The onset was invariably [illegible] by pain in the back and limbs frontal headache and pain [illegible] the eyes The conjunctivæ were invariably suffused and [illegible] intolerance to light a temperature ranging from 101° F to 103° F and a markedly slow pulse in relation to the temperature—a sign which obtained during the whole course of the disease During the [illegible] days the temperature had a tendency to drop to 100° F or [illegible] in the minority of cases gradually sank to normal by the sixth or seventh day But in the majority there was a distinct rise in the fourth or fifth [illegible] the thermometer registering 102° F to 103 F this was followed by a rather rapid drop to normal on the sixth or seventh day This latter type of temperature does not correspond with the description of phlebotomus fever given by Staff Surgeons J E Johnston and J W Miles in the July, 1917, number of the Journal p 326 but rather simulates the terminal rise one sees in dengue fever the absence of rash and the slowness of pulse differentiate between the two complaints

The duration of the fever was six days in twenty-five cases and seven days in the other fourteen Convalescence was invariably uninterrupted and rapid

During the course of the disease the patients chiefly complained of the pain in the back and behind the eyes also of insomnia and sweating They were practically unanimous in the descriptions of their symptoms one complained of stiffness of the muscles of the neck, three had herpes labialis but otherwise there was no difference except in degree Constipation necessitated the use of aperients in most cases There were no chest complications and the urine was in every case devoid of albumen

Until the middle of October I had no microscope but after that time I regularly examined blood films An increase of mononuclear leucocytes (7 per cent) was the most noticeable change from normal

Treatment—One could only alleviate symptoms Aspirin had a most beneficial effect on the headache and pains in the back and limbs Unfortunately I soon exhausted my stock of this valuable drug and had to substitute sodium salicylate which was not nearly so efficacious Quinine is worse than useless, only increasing the headache I relieved the insomnia by Dover's powder in 10 gr doses or else by veronal (6 gr) the latter drug giving most excellent results producing a dreamless sleep without the subsequent constipation associated with compounds of opium During the fever the diet consisted of milk eggs and bovril

The accommodation of the sick was a little difficult but fortunately the weather was fine The men were slung in their hammocks in a screened off portion of the forecastle deck The captain kindly placed his

cabin at the disposal of the sick officers. It [illegible] comfortable little hospital. During convalescence Eastern [illegible] administered. As the sick berth attendant was suffering from [illegible] the time of the epidemic a great deal of extra work was thr[illegible] berth steward, whose conduct deserves every praise.

Beyond thorough airing of bedding, and keeping the ship as dry and clean as possible together with as much ventilation as practical, little could be done in way of prophylaxis.

Diagnosis.—Dengue, malaria and small pox seem to my mind the most likely diseases one is likely to confound with sand fly fever, but as previously stated the absence of rash, together with the slow pulse, distinguish it from the first-named complaint. With regard to malaria, the absence of rigors, the character of the pyrexia and if one has a microscope, the blood should enable one to differentiate. The backache and pyrexia certainly suggest variola, but the absence of any prodromal rash associated with recent vaccination, should soon dispel one's anxiety upon this score.

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TWELVE MONTHS IN A T.B.D.

BY SURGEON PROBATIONER S. H. WADDY, R.N.V.R.

THE article by Surgeon Probationer W. S. Sykes in a recent [illegible] the Journal (vol. iii. No. 3, p. 382) suggests that the following notes and [illegible] of an improvised sick bay may be of general interest. Possibly su[illegible] battleships of other Grand Fleet Destroyers may set on the suggestion of [illegible] the drying room into a dispensary an arrangement which I am sure [illegible] found better and more convenient than using any of the after compartments [illegible] the C.P.O.'s mess.

After being gazetted a surgeon probationer in the R.N.V.R. I not[illegible] classes and hospital work until at last after what seemed an interminable [illegible] of waiting I was appointed for one month's instruction to H.M.S. 'Victory' additional for Haslar Hospital. Four weeks later I was delighted to receive [illegible] appointment to a new ship, a destroyer of the latest type. She was building conveniently near my home and as my experience of the sea had been very slight it is not surprising that I was sufficiently enthusiastic to pay her a visit in the dockyard before commissioning. I was anxious to see the ship and to know [illegible] I was to be berthed. I found that the wardroom was to be my abode, and that all my personal belongings and my bedding had to be stowed in drawers beneath the settees. Here during the following months they were frequently wet owing to the amount of water shipped at sea. Clean clothes had always to be dried immediately before wearing, but on at least one occasion they were unobtainable as the drawers were so swollen that it was impossible to open them. At night as soon as the wardroom was available, my servant prepared the bunk and of the two very hard pillows carefully selected the harder one and invariably placed it uppermost. If he felt particularly obliging he drew the curtain but more often he did not. Wardroom accommodation affords very little opportunity for study, and one cannot help feeling that with the luxury of a private sanctum the long monotonous evenings of the winter which were utterly wasted might have been more comfortably and more profitably spent.

My first occasion as "doctor" of a man-o'-war occurred at a most inopportune moment. Standing on the quarter deck in sight of home, I awaited the boat which was to take me ashore for the night when a steward presented a bleeding finger. We had been in commission less than two hours, and it took a considerable time to discover and unearth the necessary dressing. The two chests were found in the petty officers' mess which though far from convenient was deemed the most suitable place to keep them and this I find is where they are kept in many destroyers. Here they remained and here most of the wounds were dressed during the following five weeks. Sometimes the mess was being scrubbed, sometimes a meal was being consumed when it was necessary to intrude with a patient. Once I was called at 4 a.m. to attend a stoker petty officer who when coming off watch had badly crushed his finger in the steam attached to the hatch lid of the boiler room. He provided further excitement by fainting but before the medical chests were accessible it was necessary for the coxswain and another petty officer to turn out of their hammocks and for a collection of miscellaneous articles to be removed. No wonder the coxswain proposed converting the drying room into a sick bay.

The drying room, not being "lined," is far from being dry in cold weather but it is large enough to contain all the medical stores allowed to destroyers—including the stretchers and first aid bags—and is conveniently situated on the starboard side of the mess deck. Having obtained the necessary permission to make use of this compartment, an obliging L.R.A. set to work, removed

[illegible] and took great interest [illegible] examining the dressings [illegible] of what is now generally known [illegible] as the dispensary [illegible] against the forward bulkhead and [illegible] the angle iron which ran [illegible] side of the forecastle a very useful shelf is erected and the medicine [illegible] so that the lid is at a similar height about 3 ft 8 in from the [illegible] This chest is in front of the door against the side of the ship The lid of [illegible] and the shelf are both covered with American cloth and form two very [illegible] tables which are of great utility when we are sterilizing instru[illegible] tubes with nargol jelly and calomel cream. The angle iron is [illegible] placed and has been converted into a rack to hold ten bottles [illegible] tin of [illegible] and a spray for pot permang The bottles [illegible] substances as mist pect lead lotion, boracic lotion, distilled [illegible] of pot permang a weak solution of [illegible] and methylated spirit [illegible] wooden square so that in the very worst weather we [illegible] they have been perfectly safe In the corner 20 in above the [illegible] is a strong shelf sloping towards the ship's side On this is [illegible] the Neil Robertson being held at a convenient height [illegible] is fastened to the after bulkhead i.e. on the right hand [illegible] of the [illegible] The first aid bags—ready for distribution—are hung on the same bulkhead by hooks which are spaced so that the bags lie alternately [illegible] do not bulge and [illegible] unnecessarily on the limited space, and any bag [illegible] be removed without interfering with the others On the deck a piece of wooden grating was fitted and in the left hand corner by the door is a small stove which, when it is lit to keep the place dry, is sometimes used as an operating chair At a height of 4 ft from the deck this diminutive 'sick bay' measures 5 ft 3 in by 4 ft 4 in With the door shut there is just room to examine a man though it is feasible for him to stoop or lie down for examination it is more convenient to go into his mess

In the first aid bags are the various dressings bandages tourniquets and safety pins and a few tubes of antiseptic paste The latter I rarely used Of the very few cases of simple cuts which have been treated with the paste, two have shown signs of suppuration and I have wondered if the antiseptic acts on the metal of the tube Often the paste which has been in contact with the metal is dark coloured, and this is more often the case in tubes which have been used and then left for a time The number of paste dressings is increased for the engine room and boiler rooms, and the whole allowance is increased in one bag specially prepared for a station amidships Here I expected to spend most of my time in action until required elsewhere and the bag is in easy reach of the engine room and the midship gun As already stated, the first aid bags are stored in the "dispensary" ready for immediate distribution when going into action In this way the contents are preserved from damage by the weather or the hard use to which they are exposed in their "battle stations," and the great temptation to use surgeons lint as cleaning rags is not placed before the men In the boiler rooms and engine rooms are tins containing strips of lint anointed on one side with vaseline These are always ready for immediate application to burns and scalds No special station has been selected for the ambrine outfit as I believe it will be impracticable to use it in a destroyer in action Even in perfectly calm weather it would require one man's attention to warm up the ambrine and prevent it from spilling or being splashed with water as the ship vibrated or slewed round at high speed On two occasions I have made satisfactory use of ambrine for the treatment of slight burns

After supplying the first aid bags the remaining stores were divided, some being kept forward and some aft the instruments and hypodermic case were kept in the wardroom It seems a good plan to have a box of cotton wool in the chart house, so that those on the bridge and the crew of the foremost gun may have a

better opportunities [illegible] likely appear in the image [illegible] has dur[illegible] ce

The segment [illegible] number of [illegible] longitudinally to serve as pads for the splints, as sug[illegible] Manual of the British Red Cross Society. Small rol[illegible] to thin sticks are economical in the use of iodine. The [illegible] of iodine bulbs are very suitable for attaching to the wounded [illegible] rating and other information whilst a number may be marked [illegible] a blue 'M' is suggested to a previous article in this Journal—to show that a morphine has been administered. This is one of the simplest preparations which has not yet reached beyond the stage of good intentions.

Having prepared the first-aid bags it was necessary to comply with the orders of the senior medical officer by giving first aid lectures. The plan adopted was to go in the evening into one of the messes and there to show the contents of a first aid bag and explain their uses. On other occasions we would spend half an hour or so discussing fractures, burns and various wounds and the methods of treatment. This was done in each mess until the necessary instruction was completed. The men all seemed interested in the proceedings often discussing certain points, asking questions and trying the various methods of applying a bandage or a tourniquet.

In addition to giving first aid lectures it is the duty of surgeon probationers in this Bonilla at any rate to talk to the men on the all important subject of the prevention of venereal disease. Some time before our first refitting leave the senior medical officer came aboard and briefly addressed the men on this topic. From time to time I also have talked to the men on the subject laying special stress on the possible results of contracting these diseases and viewing the subject from the moral standpoint also. Whether these exhortations have done anything towards lessening venereal disease I am unable to say but during my twelve months among the crew of ninety or a hundred men on board this ship there have only been two cases of gonorrhœa and one of soft chancre. One case of gonorrhœa was contracted before the ship commissioned and the other was a second attack or the re-awakening of the disease imperfectly cured. Neither of these men has returned to the ship, but seven months after his discharge I recognized the former in hospital with a primary syphilitic sore. The man with soft chancre had a syphilitic osteo-periostitis of the right tibia. He had undergone much treatment local and general including injections of mercury and salvarsan.

As mentioned by Mr Sykes the majority of cases on board consist of colds, coughs, sore throats and bronchitis. Constipation is common but I do not think it is attributable so much to lack of exercise or shortage of vegetables as to the neglect of the bells of nature. On returning to harbour after a few days at sea in fine weather, there are few applicants for a dose of opening medicine or a 'depth charge', but after rough weather the demand on the medical store is much greater. A 'depth charge' I might explain, is a popular name for the purgative pill, but it was an officer who with his eye on the dish before him, propounded the breakfast table problem "If you gave a man a depth charge would it lay a scrambled egg?" Men have frequently told me that when at sea they often feel the desire to go to the "head" but owing to the violent motion of the ship are unable to relieve themselves. Knowing the effects on forward I can well believe this but possibly lack of food has something to do with the case. In bad weather it is often impossible to cook the ordinary food while many are unable to eat. Often has the officers dinner been washed overboard on the perilous journey from galley to wardroom!

Periodically it is necessary to inspect the ship's company and the arrival of new ratings make it essential to inaugurate the "argle parade". On one occasion in the midst of a C S M alarm a case of influenza occurred. This necessitated washing down the living spaces with a solution of lysol and under

taking which some time afterwards was carried out more thoroughly after six cases of Diphtheria. The diphtheria was attributed to the consumption of large quantities of ice cream purchased from an itinerant vendor who found his way to the ship. Several men have been discharged from the ship as unfit for destroyer work, and in some cases have been invalided out of the Service. One had heart disease, another after leaving a sanatorium for consumptives had by some oversight been sent from Truro to the far north to winter in a T.B.D. One man collapsed while walking in a public thoroughfare and was taken to a civilian hospital. He has since been invalided out of the Service but I failed to discover the final diagnosis. There were suggestions of epilepsy, Méniere's disease, and hemiplegia. There have been three cases of pediculosis pubis but in one of these my attention was attracted by a pustular rash on the abdomen evidently caused by scratching. When rid of the pediculi the sores did not heal immediately, but became eczematous and caused great irritation. On the man's being exempted duty in the boiler room, they soon yielded to careful bathing with lead lotion, and dusting with starch powder. There have also been a case of hydrocele, one of varicocele and one of mastitis. The latter has been under observation for some months but the swelling does not alter much and causes little pain or inconvenience.

One evening I received an urgent call but when I found the patient he cheerfully announced "I've swallowed a rivet Sir." When repairing boots, he had a few 3/8 in. springs in his mouth after the manner of cobblers, and one of these had been inadvertently swallowed. A dose of oil room was prescribed, and nothing further was seen or felt of that iron spring.

A stoker P.O. and a stoker aged 20, suffer from internal hemorrhoids, and I was interested in the discovery that both these men ascribe their condition to boiler making or boiler cleaning. In the latter case work was started in a boiler shop at the age of 13 and five years later the lad was found to suffer from hemorrhoids. He states that when at work sitting on cold plates or boiler tubes caused great irritation and since joining the Navy he has had similar trouble when boiler cleaning. Sitting in a warm boiler causes irritation which is relieved by sitting on something cold from time to time. The most difficult case I have been called upon to treat was a bullet wound of the terminal phalanx of a finger. The nail was almost completely shot away and also part of the artery. We were far from home at the time, and the ship rolled and pitched horribly making it very difficult to arrest the arterial bleeding. This however on the third attempt was successfully accomplished by suture and ligature.

The L.R.A.s in this ship have a very happy mess. Great interest was taken in the First aid Lectures and in the subsequent operations, dental and surgical. The surgical cases consisted chiefly in opening boils, one L.R.A. being a great sufferer in this respect. He states that during a commission of three years and two months off the West Coast of Africa he suffered from eighty one boils with as many as three at the same time. A little while ago he had a very large one on his left leg and one of his messmates skillfully applied a pickle bottle. "The neck of that bottle is too wide you're drawing in half my leg." "Oh that's all right," was the reply, "you have 'condescente of the leg." Here, hold the bottle while I fetch a wandering lead." The operator returned and regarded his handiwork as the better light exclaiming, "That's better. I like a white bottle, you can see the stuff come out, and the bottom of this one magnifies it beautifully!" The sufferer moved his leg a trifle provoking the request to "keep still. You're under observation."

Having for some years before joining up been studying for the Dental Diploma I thought there might be an opportunity for useful work in this direction and I left home armed with a local anæsthetic and the necessary instruments for extractions and very temporary fillings. Occasionally we have had a wave of dental enthusiasm in this ship, and at times there have been patients from also

[illegible] the dispensary [illegible] is messes on the cross deck in [illegible] Weather permitting, the favourite [illegible] a case of a different nature requiring [illegible] to constructed the dispensary [illegible] Tins even had broken his destiny [illegible] the [illegible] the place had broken and [illegible] take the case ashore to a dental [illegible] for board so I undertook to forward the post [illegible] shows the relation of the lower teeth and the [illegible] the artificial teeth had to be fitted In his [illegible] I suggested tallow candle, but some one produced a piece of [illegible] particularly clean to begin with and less so when it had [illegible] heating over an oil lamp and once burning [illegible] Here the impression was successfully taken and in due course the case [illegible] Now there was another difficulty The new tooth was too long and the only means of doctoring with it on board was a coarse emery wheel We reported to our depot ship and there examined the many grindstones and emery wheels but eventually borrowed a fine carborundum stone from a mender watch maker With this the tooth was shortened and the repair case was voted a great success An artificial case I carried too far back towards the soft palate often produces a feeling of sickness and naturally this is felt more at sea than ashore I have noticed that even a small partial plate, if it fits tight so that food can get above it, tends towards sickness when at sea If a man wearing such a case feels a tendency to sea sickness he will probably be quite all right on removing it

In his article on Some Medical Aspects of Aviation (the Journal, vol iii No 3) Surgeon Greene Anderson remarks that most aviators fly with their mouths slightly open Is this to allow the pressure of air to reach the Eustachian tubes? If so I suppose motorists also open their mouths when travelling at high speed The way in which children put a finger to their ears when entering a railway tunnel is very noticeable, and I think I know of a driver of an express train who seems to open his mouth when passing through the cab of his engine, but in this case the act seems more like a gasp for breath I mention the matter because I am told that men in the Naval gunnery schools are instructed to open their mouths during gun fire How soon to place equal faith in the efficacy of this precaution and personally I am too afraid to plug my ears to give the experiment a fair trial

Quite recently rats have been introduced in the ship rather to the satisfaction of the sailors who regard them as a good omen I unfortunately then preferred to diet on the Finding of The Origin and Nature of Life rather than on a pair of new boots from which they carefully nibbled the laces As a fisherman who seemed particularly superstitious on being asked what would happen if a rat was killed on board, declared That means we are going into action, sir

During my short experience of the sea I have seen much and learnt much and have returned to civilization with a deeper understanding of human nature To some extent my nomadic instincts have been satisfied I believe the Admiralty has sent me to many quaint little places which I could not visit in the ordinary course of events There have been some magnificent exercises and I have been blessed with the essential qualification of strong guts to withstand the discomforts of such trips as we have had to make in rugby scrums In many ways the experience has been advantageous It has been a pleasant change for the medical student provincially uncouth to be paid to learn his an officer, after years of paying to be taught as a student And now I hope in a short time to enter upon a new period of service as a two stripe doctor in the Royal Navy

Clinical and Practical Notes.

DEPRESSED FRACTURE OF THE SKULL—BLINDNESS—OPERATION ON BOARD—RECOVERY

By Lieut. Surgeon J. MACDONALD, M.D., R.N.

Early in December many injured were brought on board suffering from the effects of a violent explosion in the neighbourhood. The majority were foreigners, representing different nationalities and their injuries were in most cases complicated with shock, facial and scalp wounds, broken bones and shattered limbs. The patient under consideration was a petty officer, aged 42, who had a scalp wound 4 in. long, running transversely across the posterior surface of the left parietal region. Whether it was caused by a flying fragment or by a fall is uncertain. He was quite conscious but felt rather stunned. The adjoining hair was cut short, the injury surface scrubbed with iodine and a simple dressing applied, after which he was put in his hammock.

Next day, when the pressure of work had somewhat subsided, the wound was redressed. There was a good deal of clotted blood, but probing failed to reveal any fracture. He complained of headache and inability to see. Temperature 98·1, pulse 50, full and regular. The wound was redressed. On the third day the general condition was unchanged. The injured area was much shaken with free serous discharge. Solid bone could be felt all along the bottom of the wound, but on firmly retracting the posterior border with forceps a small crack or fracture, just sufficient to admit the end of a probe, could be detected. It was hardly visible when it covered by the retracted scalp. The head was shaved and an iodine gauze applied. During the next five days the patient made no improvement. The temperature kept normal and the pulse maintained its full and slow beat, varying between 48 and 52.

With the aid of a strong lamp he could distinguish light from darkness, but was unable to follow the movement of a hand across his face. The pupils were equal, moderately dilated and reflexes normal. There was no ocular paralyses or fundoscopic changes. The stereoscopic sense was intact.

It was decided to operate. Chloroform was given and taken badly. The brain was seen almost imperceptible, and the difficulty of administration was increased owing to the region of the scalp involved requiring the head to be turned forward to one side. A curved incision downwards was made from the extremity of the wound and a flap reflected towards the occiput.

A gutter shaped fracture was then discovered near the end of the wound and running downwards and backwards at right angles to it. The broken surface was 1 in. in length, ½ in. broad and saturated with blood, clot, although the underlying soft tissues showed no signs of bruising. Topographically the position corresponded to the angular gyrus or upper part of the occipital lobe. A simple depressing was made, and the outer and lower lateral where the bone was thin, a portion of the circle extending over the depressed area and a disc removed. On inserting the little finger under the fracture the sharp edge of a fragment of the inner table turned sideways could be felt pressing firmly on the dura mater. This was raised and extracted with Spencer Wells forceps. It was triangular in shape, ¾ in. long, base backwards, the outer table forming only a small portion of the surface. Another more linear fragment measuring 1 in. by ½ in. was also made up of the inner table. Towards the upper end of the fracture a small rounded piece of bone, as large as a pea, was found completely detached and hung loose between the dura and the skull. It corresponded to the broken surface first discovered.

[illegible] and [illegible]

Troublesome hæmorrhage took place [illegible] which ineffectual attempts were made [illegible] Wells forceps The latter always slipped off [illegible] There [illegible] bursing or bulging of the dura A packing of gauze [illegible] scalp turned upwards over it A large dressing was then applied

On the same night the temperature was [illegible] 100 per minute, had lost its compressed character Notwithstanding [illegible] pressed himself as feeling much better and could count fingers [illegible] feet as well as recognize familiar objects A watch untied [illegible] was left in situ for two days Some blood stained [illegible] requiring an additional pad but on the third morning the packs were removed all the oozing having stopped and the flaps were simply [illegible] approximate coaptation with silkworm gut At the upper end of the [illegible] natural retraction of the anterior border prevented opposition without undue tension and a small opening was also left for drainage purposes at the lower corner of the flap The stitches were removed seven days after wound Unfortunately pus had formed in connection with the uppermost suture inserted in the scalp wound and a gauze drain was required Elsewhere the parts were healing perfectly A sinus remained discharging pus The general health of the patient was excellent The temperature remained normal he took his ordinary food slept well and the visual acuity was $\frac{6}{9}$

Three weeks after his injury an opportunity occurred of sending him to hospital When seen a week later no X ray photograph had been taken and showed no necrosed bone left in the skull The sinus was closing but still some discharge and Deputy Surgeon General V G Thorpe R N was of the opinion the patient would do very well

The case was misleading at the outset owing to the fractured bone not implicating the actual wound in the scalp, the latter being probably a secondary effect of the blow It is not contended that the blindness which followed was entirely due to the pressure effects of the splintered bone The general cerebral disturbance was probably an important factor Nevertheless during the eight days which elapsed between the accident and the operation, no improvement took place, but on the next day the change for the better was definite and decided The cerebral pressure type of pulse had also disappeared Theoretically a lesion confined to the left angular gyrus, or the occipital lobe ought to cause word blindness or homonymous hemianopsia Neither was present the loss of sight in both eyes being equal in all directions Three days after trephining he could recognize different people at the opposite end of the sick bay and with some difficulty could read a magazine before he left the ship Trephining when the ship is wallowing in the ocean and two men steadying the table is not an operation of choice and with the patient safely back to bed without any untoward accident occurring one feels thankful it is not a daily routine procedure

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SEVEN CASES OF PERFORATED PEPTIC ULCER

By Fleet Surgeon T D HAMILTON FRCS(I) R N
Sick Quarters Shotley

Within the last twelve months (May 1917 to May 1918) seven of these cases were brought into Shotley Sick Quarters and were all treated by immediate operation in the usual way The first of the series was a gastric ulcer the remaining four being duodenal Briefly the cases were as follows —

Case I — A S, aged 19 A B Admitted on May 10 1917

Sudden severe pain after tea at 4 30 p m, followed by persistent vomiting On admission pain tenderness and rigidity over right half of abdomen

[illegible] face pale [illegible] (Operation) Is there [illegible] dyspepsia [illegible] the abdomen [illegible] umbilicus [illegible] normal The upper [illegible] was then [illegible] hand size of a sixpence [illegible] to lesser [illegible] half way [illegible]

[illegible] Admitted September 1 1917

[illegible] pain [illegible] pain vomited twice On admission [illegible] part of right rectus pulse 76 [illegible]

(Operation [illegible] perforation) Perforation on anterior [illegible] the size of a sixpence

[illegible]

[illegible] Gunner 2B stoker Admitted September 22 1917 at 10 45 p m [illegible] seen in a submarine was seized with sudden severe pain [illegible] Thore was no medical officer but the severity of [illegible] permission obtained to return to port unluckily [illegible] in the journey and it was thirty eight hours after the [illegible] was admitted On admission pain tenderness and [illegible] tenderness most marked in right iliac fossa Abdomen [illegible] 132 abdominal facies No history of dyspepsia

(Operation [illegible] ty eight hours after perforation) As there was no history of [illegible] tenderness was worst over appendix the abdomen was first [illegible] the appendix was normal Upper abdomen then [illegible] of a halfpenny on anterior superior aspect of [illegible] in back great thickening stitches cut out as last as [illegible] two hold Abdomen full of fluid and purulent lymph In spite [illegible] before admission and the severe general peritonitis patient [illegible] weeks

Case 4 — Wounded 4c L I—V Admitted April 21 1918

Sudden [illegible] two hours after breakfast no vomiting On admission pain [illegible] and rigidity over right rectus Tenderness most marked over [illegible] pulse 9 abdominal facies soil bathed in sweat Well marked history of duodenal dyspepsia for two months

Operation (under [illegible] three quarter hours after perforation) Perforation on anterior superior aspect of duodenum 1½ in from pylorus about the size of a [illegible] penny bit [illegible] was with extravasated food a cannular opening for [illegible] was made [illegible] pulse [illegible] Patient has now returned (May 5) but very slight tenderness of [illegible] hunger pain and a gastro enterostomy will be performed later

Case 5 — Mr [illegible] Passed 37 Lieutenant R N R Admitted April 27 1918

Sudden severe pain [illegible] after drinking a cup of milk no vomiting He was seen and carried to port landing him at 2 p m On admission very [illegible] pain [illegible] all over abdomen tenderness most marked in duodenal [illegible] pulse 92 abdominal facies Well marked history of hunger pain [illegible] and recently

Operation (four and a quarter hours after perforation) Perforation on anterior [illegible] part of duodenum 1½ in from pylorus about the size of a threepenny bit The stitches have been removed the drainage tube discontinued and the wound is practically healed

Case 6 — F—C aged 30 chief stoker Admitted May 11 1918

Sudden severe pain at 8 a m no food since previous evening no vomiting On admission pain tenderness and board like rigidity all over abdomen tenderness most marked in epigastrium pulse 106 face drawn and anxious Previous history of dyspepsia

Operation (three and a half hours after perforation) performed by Surgeon W E Fox, R N Stomach and duodenum adherent to parietal peritoneum, perforation on superior aspect of duodenum just beyond pylorus about the size of a threepenny bit Patient developed a small residual abscess but wound is now practically healed (May 31)

Case 7—G W aged 26 steel hand Admitted May 16 1918

Sudden severe pain at 11 30 p m three and a half hours after breakfast vomited twice On admission pain tenderness and rigidity all over abdomen tenderness most marked in epigastrium pulse 11 Previous history of dyspepsia for over six months with well marked hunger pain

Operation (four and a half hours after perforation) Large perforation the size of a halfpenny on upper surface of duodenum just beyond pylorus great induration of ulcer great difficulty in catheterisation a catheter held inserted a long way from edges of ulcer Wound practically healed (May 31)

The ages of these cases were 19 21 22 17 37 and 26 In three of them diagnosis was easy, but the other two were young men without previous history of dyspepsia and without both of hunger pains above the umbilicus one complained most of his right thigh Case 4 was operated on two and three quarter hours after perforation and yet was far worse condition than Case 1 operated on two and a half hours after perforation The explanation probably lies in the fact that Case 4 had made a hearty breakfast so that his abdomen was filled with stomach contents Case 5 had only taken a glass of milk for his morning meal

The same incision was used in all cases—a vertical incision through the right rectus 1 in from the middle line and extending from the costal margin nearly to the umbilicus, thus giving plenty of room

NOTE ON A CASE OF SALIVARY CALCULUS

By Surgeon G H HAYES M B R N

Following the receipt of a letter one evening asking me to go and see a R N A S rating home on leave and complaining of feeling very ill with a severe sore throat and unable to swallow I visited the case and on examining the patient found a swelling below and to the right side of the tongue on floor of mouth which fluctuated The tongue itself was much swollen especially on its right border, and there was a large palpable gland on same side The back of throat appeared to be quite normal Patient was unable to open his mouth except to a very slight extent I incised the swelling and evacuated a large quantity of white coloured pus Returning to see the case in a few days time, patient presented me with one large calculus ¾ in long 1½ ¾ in broad and one very small stone Both were of a whitish brown colour and friable Patient had passed these stones the morning following the incision of swelling The passage of the calculi caused considerable pain

I believe this to have been a case of calculi of the sublingual gland and as such of interest from I believe its rarity I would welcome any remarks as regards the etiology of the condition

A CASE OF PEMPHIGUS CHRONICUS

By Staff Surgeon SHELDON T DUDLEY M B, B S R N

This case is worth reporting on account of its rarity and the fact that the diagnosis was missed by the writer and many other medical officers

On April 20 1916 an A B aged 24 was sent to hospital as a case of acute mercurial poisoning His family and past history were uneventful The patient first reported sick at Mudros with blisters on his tongue and penis, and

[illegible] registered to have syphilis as he was given mercury. H[illegible] [illegible] on May 4 was as follows. He was anæmic and wasted. H[illegible] whole [illegible] the oral mucosa was a mass of shallow ulcers. His lips [illegible] oedematous [illegible] crusty. Lesions similar to those in the mouth were present on the [illegible] membrane. The conjunctivæ were also affected. On the trunk [illegible] were a few scattered ulcers with circinate edges; they were covered with [illegible] and had a discharge. Some pigmented spots the site of healed lesions [illegible] were present. No bullæ were then present. There was no history of con[illegible] previous to the onset of the illness. The patient [illegible] until May 11, when the characteristic bullæ began to appear. [illegible] first hemispherical vesicles filled with clear fluid surrounded by [illegible] skin; within twelve hours the contents of the vesicles became turbid [illegible] skin red and inflamed. The bullæ varied in size from a pea to a florin. [illegible] the next stage adjacent bullæ would break down and coalesce to form the [illegible] present on admission, in this way large areas of skin became [illegible]. The case progressed downhill and before the end nearly all the skin of the body was or had been affected. Some of the lesions would heal but not all, [illegible] as new ones formed. In the last stages of the illness the unfortunate man was a misery to himself from pain of the raw surfaces, and in offence to the whole ward from the stench of the discharge from the infected skin. Throughout the patient's stay in hospital he ran a low swinging temperature of 100° F or so and his pulse rate was 100 to 120. After an illness lasting five and a half months death took place from exhaustion on August 31.

The Wassermann reaction was twice negative. The blood count showed a secondary anæmia with a slight eosinophilia (3 to 4 per cent.). Blood cultures were sterile.

The urine always contained a trace of albumin. Sugar, acetone, and casts were never present. The urea excretion was diminished down to 14 g. daily in the latter half of the illness. Clear serum from the earliest vesicles showed no organisms by dark ground illumination and gave sterile cultures. Turbid fluid from an unbroken bulla contained numerous polymorphonuclear cells, a few eosinophils and Gram positive intra and extra cellular cocci; cultures grew a long chained streptococcus with no hemolytic power.

The patient showed little response to treatment. Galyl, Fowler's solution, an autogenous streptococcal vaccine and thyroid extract were tried in turn and all seemed equally useless. All kinds of local treatment were tried. Baths of Dakin's solution were the most satisfactory in keeping down the smell of the discharges and caused least pain to the patient. In spite of a negative Wassermann the writer was sure the man had syphilis until May 10, when the diagnosis of pemphigus chronicus became obvious with the appearance of the typical bulla. Sequeira states the disease often starts on the mucous membranes and his description of pemphigus chronicus fits this case in every detail. Dermatitis herpetiformis is the condition most likely to be confused with the present case, but it is excluded at once by the fact that the bulla always first appeared in the unaffected skin, the lack of a marked eosinophilia in both vesicles and blood and the subacute course of the disease. To mistake the case for syphilis was perhaps excusable at a time when no fresh vesicles were present and the case had ulcers on the penis appearing a month after concaction, but there was no need to add mercurialism. The case was a useful lesson to the writer in reminding him that there are other skin diseases in the Navy as well as syphilis and scabies.

A CASE OF TRYPANOSOMIASIS CONTRACTED IN THE CAMEROONS WITH CALABAR SWELLINGS ASSOCIATED WITH *FILARIA DIURNA* AND MALARIA

By Temporary Surgeon General P. W. Bassett-Smith, R.N. (Retd.)

In the Journal of October 1916, p. 104 a description of the earlier stages of this case of trypanosomiasis was given and the high degree of eosinophilia present in the blood was noted. On November 21 1916 the patient left hospital but was kept under treatment with atoxyl and as the disease began to become very marked and the trypanosomes very much on the increase in May 1917 he was given every week an intravenous injection of ¼ gr. of oxide of antimony and also ½ gr. intramuscularly. This immediately cleared the peripheral blood of the parasites and the paroxysms of fever ceased. In September he left London and received no more treatment but films of his blood were examined weekly. At the end of December 1917 trypanosomes again appeared after being quite free for eight months or two years after contracting the infection. All this time calabar swellings appeared from time to time but it was not until April 1917 that a dierol sheathed filarial embryo was seen in the peripheral blood and since then two or three have been found in every film examined the eosinophilia being constantly present also. A large number of animal inoculations have been made bringing out the following points:—

(1) That this Cameroon strain is but slightly toxic, very difficult to transmit and not always pathogenic to rats but when successfully started in them it may by passage become as virulent as the ordinary gambiense form.

(2) Intravenous injections of arsenic and antimony were not effective against malaria and filaria parasites as these appeared in the peripheral blood during the treatment. The antimony, however, was very effective in clearing the blood of the trypanosomes.

(3) The calabar swellings are definitely associated with the *Filaria diurna*. The latter only appeared in the blood fourteen months after infection and the whole time causing a high degree of eosinophilia. In March 1918 an active mature filaria loa the parental form, was removed whole from the subcutaneous tissue of the chest wall.

A CASE OF SPOROTRICHOSIS

By Temporary Surgeon E. L. Sturdee, R.N.

My excuse for publishing this case is the liability of those unfamiliar with the disease to diagnose sporotrichosis as syphilis or tuberculosis. The condition is comparatively rare but the fact that the case to be described occurred in a man doing his ordinary work as a stoker in the Royal Navy and the difficulties in the way of curing the disease unless it is correctly diagnosed and appropriate treatment administered, make it necessary that medical men should be on the look out for it and be able to recognize and treat it.

A stoker came to the sick bay with the history of a small boil on the inner side of the left heel which he had treated himself with a proprietary ointment which seemed to heal it. A week later however a cluster of small lumps had appeared on the front of the leg which later on broke down into ulcers. He was not conscious of any injury which might have caused the primary lesion but thought his boot might have chafed it. On examination there was a discoloured patch on the left heel marking the place of the original lesion. There was a similar patch on the dorsum of the foot while on the front of the leg along the lines of the lymphatics were five or six small ulcers with sloughing bases and somewhat indurated edges. They were about the size of a threepenny piece and

resembled syphilitic gummata. On closer investigation it was noticed that the lesions consisted of small subcutaneous nodules surrounded by a small area of erythema. These in a short time suppurated and were covered by a crust, while in a day or two had already broken into open ulcers. The disease was limited to the left leg and foot. There were no less ones above the knee.

Diagnosis.—This was at first made clinically and afterwards was confirmed by the demonstration of the fungus in a smear. With regard to the clinical diagnosis it should be excluded by the rapid development—five or six ulcers had appeared in the course of a week—the history of an original lesion now healed followed by lymphatic lesions along the lines of the lymphatics and later by the reaction to treatment. Syphilis by the limitation of the disease to one leg and the absence of other signs of syphilis elsewhere, occasional infection by the rapidity with which the lesions broke down into ulcers, the absence of lymphatic gland involvement and the history. The discovery under the microscope of the long filaments and branches of spores of the fungus made the diagnosis certain.

Treatment.—Dressings of 1 per cent. iodine solution were applied locally and iodide of potassium was given internally. Large doses of iodide had to be administered, little or no improvement being noticeable until the patient was taking 100 gr. daily, while the omission of the iodine dressings retarded the progress immediately.

There were no constitutional symptoms, and the patient carried on work on the mess decks during the whole time he was under treatment. The disease took about two months to clear up.

This case is an example of the most common form of sporotrichosis, but cases occur where the abscesses are disseminated all over the body, while ascending to sequestra, the subcutaneous tissues, bones, and even the internal organs may be attacked. The diagnosis can only be made definitely by the discovery of the fungus. This is not always easy to demonstrate in smears from the discharge, but can be cultivated on most of the usual media.[1] It is advisable that the culture be taken from a serpentine nodule before the crust has separated, the plutonium wire being passed under the crust to the pus below. The serum of patients suffering from sporotrichosis agglutinates an emulsion of sporotrichia spores. The reaction of the disease to iodides makes the resemblance to syphilis still more striking, and it only to avoid labelling a man unjustly with so dreaded a disease, a correct diagnosis is desirable.

SUGGESTED ADDITIONS TO THE SERVICE AFLOAT SCALE OF INSTRUMENTS.

By Surgeon Lodge A. Rankin, M.B., R.N.

In place of the blunt needle as supplied with the Saline Infusion Apparatus, which necessitates a skin incision and ligature of the vein, the following is recommended. An ordinary sized bore needle about 2½ in. long, ending in a [illegible] into which fits a small spigot to be attached to the india rubber tubing of the saline apparatus. Thus for saline infusion the technique would be:

(1) Tie a rubber tubing not round upper arm and clipped with Spencer Wells (2) [illegible] (or of tourniquet).

(2) Antecubital space rubbed with ether.

(3) Tincture selected rubbed along the course with tincture of iodine.

(4) Needle already sterilized plunged straight into vein, going in through the

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[1] Culture media are enriched by the addition of sugar or glycerine as [illegible]

skin directly over the [illegible] is at [illegible] f it is [illegible] as [illegible] will then appear from the ear [illegible] to let [illegible] the pressure [illegible] in the vein from the coeq[illegible] of the tour[illegible] there is no fear of air entering through the empty needle.

(5) The saline fucoel and tel o be [illegible] filled with saline are attached, the spigot being put directly into the socket [illegible] the oozing blood

(6) Tourcquet taken off and am[illegible] [illegible] joined run in

(7) Needle withdrawn and wound [illegible] with [illegible] and bandage applied This is very quick and safe

It is also suggested that a fairly [illegible] glass [illegible] syringe which will fit the same needle be supplied beside [illegible] (1) instead of the saline apparatus being attached the syringe will [illegible] solution to be injected e g saline solution, oxosalvarsan corrosive sub[illegible] [illegible] fitted on and the solution injected After it is all injected the needle and syringe are left in the vein for a minute so that the venous blood may carry away last of solution and wash the needle thus prevention being left to surrounding tissues on withdrawal of needle.

The whole small operation from start of sterilization of syringe and needle and preparation of solution to finish should not take five minutes

A Simple Method of Aspirating a Chest

Instead of the Aspiration Apparatus applied, which is clumsy with its vacuum pumps and bottles all that is necessary is a medium sized trocar and cannula

After the diagnosis of effusion is made the chest wall is painted with iodine in the site of election say, seventh or eighth space in posterior axillary line and the trocar and cannula plunged in The trocar is removed and the effusion will immediately start coming out and after a little will take on the rhythm of respiration When the effusion is nearly evacuated the remaining fluid is collected near the needle by shifting the position of the patient i e if he was sitting up support him leaning backwards and towards the opposite side Thus practically all can be aspirated When flushed trocar is withdrawn and puncture sealed with gauze and collodion

The advantages are simplicity safety and complete evacuation without that troublesome cough towards the end of ordinary vacuum aspiration

Towards the end as the fluid comes out during inspiration, a certain small amount of air will enter during expiration This is extremely beneficial as it replaces to a certain extent some of the fluid There is no danger of collapse of the lung on account of this intermittent entry of air The collapse of lung is only possible when air enters continuously in bulk There are no disadvantages

In the same way for ascites, the trocar and cannula large size, are plunged in at the site of election i e. the junction of the outer and middle thirds of a line, joining the umbilicus and left anterior iliac spine, and the ascitic fluid steadily pours out, towards the end the patient is rolled about till all drains out If by any chance it should suddenly stop a blunt probe is passed up the cannula and frees any infringing omentum The trocar is then removed and one skin stitch inserted

Advantages Simplicity and safety and there is no danger in evacuating all the fluids at once The old idea of not evacuating ascitic fluid quickly seems to rest on no practical facts

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FIRST AID CLOTHING LOCKERS AND TINS FOR DRESSINGS IN FLEET SHIPS—LOCKER CLOTHINGS MUSTERS

In the Grand Fleet there are many excellent arrangements for first aid treatment on board battleships but no method is suitable for every kind of ship, and must vary according to the construction of ship. The first aid arrangements here described are designed originally for destroyers but they are applicable to all unarmoured or partially armoured ships. Before the War two commissions to scouts had demonstrated to me the impossibility of keeping first aid dressings in a satisfactory condition unless protected in watertight tins.

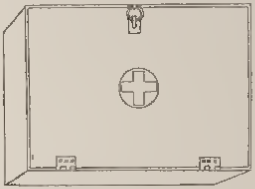


Fig. 1.—Watertight locker.

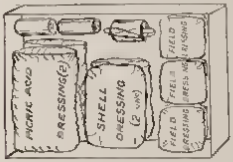


Fig. 2.—View of tin case as fig. 3 with back removed showing dressing.

During the War, whilst senior medical officer of a destroyer depot ship it was [illegible] experience that men would apply to a wound the first available dressing, [illegible] non septic the latter might be. Many a time whilst making my [illegible] inspections of destroyers first-aid arrangements have I pulled out of the first aid bags in use cleaning rags or packets of wool gauze dressings and bandages soaked in water. I am sure that the expense of patent tins for dressings would be covered many times over by the saving of waste. It was partly the appalling waste that caused me to insist on dressings being kept in watertight tins and at first discarded tobacco tins were used.

It is partly as a basis for further improvement that this article is written as I did not remain long enough in the depot ship to see all the tins (described below) issued and tested. That these were appreciated is vouched for by several surgeon probationers whom I have since met. One informed me that the tins were carried

[illegible] from old to new boats regardless of the parent ship [illegible] have also had [illegible] for details in order that they might be adapted in a [illegible] ship

The plan I proposed was to have a watertight locker [illegible] near each gun and at other necessary positions, in which was placed a hermetically sealed tin containing a first aid equipment. The first I was unable to obtain but the second was forthcoming.

Each tin contained six field dressings, two shell dressings, two picric acid dressings, one tourniquet and two bandages.

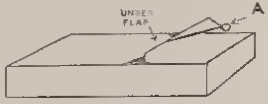


FIG. 3.—The case for dressings showing lifted flap A partly torn off.

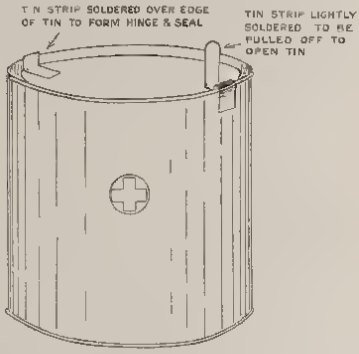


FIG. 4.—Total case tin for sterile dressings.

A capsule of iodine and a gauze dressing (such as are supplied to destroyers) might be an advantage, but on the other hand the simpler and lighter equipment is the better. The tins themselves were obtained from Messrs. Williamson and Sons, Ltd., Worcester, who suggested the design to meet my requirements. They are 14 in. × 8½ in. × 2¼ in. with a whole top to tear off in two pieces, each piece being fitted with a ring for gripping, as it is essential that they should be able to be easily opened. The bottom is supplied loose. The tin was supplied

with a loose bottom in order to be filled on board. The only article not supplied in the service afloat scale is the shell dressing but this can be made up on board from cotton wool wrapped in gauze to which a bandage is tacked, and then inclosed in protective tissue.

After having filled the box was placed in an oven and baked, but most modern ships have efficient disinfectors. The loose bottom was then soldered on, the electric iron from the torpedo department is very handy.

All my destroyers were supplied with four of these boxes, but it is not only in destroyers that these outfits are required. They are useful in larger ships where there is little armour and also in outlying dressing stations of armoured ships which might be inaccessible during action.

Lockers not being available in my present ship the tins are sewn up in canvas which is then painted and marked with a large red cross and the name of the station. The outfit is always kept at its station and during the past seventeen months I have only lost one, and that during a refit although there is an impression that each box contains a pint of rum—at least I was once so informed when going round the stations with a demonstration box.

The lockers are really an essential feature and it has always appeared an anomaly to me that lockers should be provided for cleaning rags for the guns but not for the surgical cleanliness of wounds. In H.M.S. "Foresight"—I found that the cleaning rag boxes were not used so they were appropriated and painted with a red cross, but one is not often so lucky to find unappropriated lockers.

Whilst on the subject of first aid I may mention that the dressings in all the bags carried by stretcher parties in my present ship are kept dry and sterile in tobacco tins.

Two strips of tin are soldered on to a tobacco tin at opposite sides, one is bent over and firmly soldered to the lid to form a hinge, the other which is somewhat longer is bent over and lightly soldered at one spot on the top of the tin leaving a loose end in which the strip may be again detached. In this way I always know if my dressings are intact and sterile.

THE SERVICE SPIT KID—A SUGGESTED IMPROVEMENT.

By Staff Surgeon J. LEWIS SMITH, R.N.

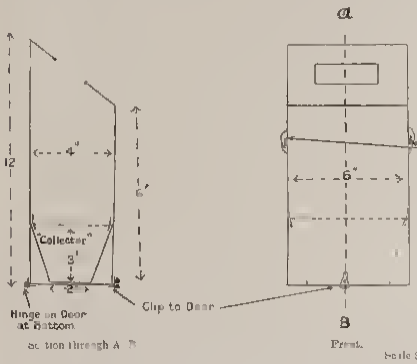
The wooden Service spit kids have always struck me as being a somewhat passive enemy to the medical officer by virtue of their construction. It would appear somewhat paradoxical that we should lecture on the prophylaxis and prevention of such a disease as tuberculosis and yet these old fashioned ship fittings are still with us. I may mention that I have seen galvanized iron spit kids of the same shape as the wooden ones in use in one Naval hospital. The disgusting habit of promiscuous expectoration could be stamped out with education under a strict regime since it is all done when *actually* smoking. Once so very little if any chewing of tobacco in the Service of the present day.

Expectoration in such confined communities as a ship's company can not be too severely repressed and in stand easy periods the suppression of this habit should be in the hands of chief petty officers and petty officers who should be strongly imbued with the responsibility of their duty in this respect. If the wooden spit kid was abolished there would only be two places where a man could spit, namely on the deck and over the side. With regard to the former I cannot conceive any executive officer tolerating such a state of affairs. To maintain the necessary state of tidiness and cleanliness some form of receptacle for cigarette ends, matches, &c., must be provided.

I would therefore suggest the issue of a number of small metal receptacles as

here described These would occupy less room than the wooden spit kids at present used, and are easily kept clean The stowage space taken up by them is an important item especially in certain classes of ship

The box which is oblong in shape is of thin galvanized metal and is fitted with lugs to allow it being easily fixed to and detached from bulkheads It is twelve inches long at the back the top slopes from back to front, making this latter measurement six inches The width is four inches The sloping top is fitted with a decent sized aperture to receive the cigarette ends, &c. The edges of this



aperture can easily be strengthened to allow a pipe being knocked out against it A short distance (three inches) from the bottom which is hinged at the back and fitted with a clip at the front for fastening, is a funnel shaped arrangement acting as a collector for the smoker's refuse This part is so fitted that nothing drops between it and the edges of the receptacle proper as shown in the illustration It is an advantage to have the box painted FOR MATCHES AND CIGARETTE ENDS

My thanks for the drawing to scale are due to Mr A G W Todd carpenter R N

Reviews

[illegible] ISTRATION OF A NAVAL [illegible] SHIP By [illegible] R.N. Senior Medical Officer R.N. Hospital [illegible] Wright and Sons Ltd 1918 Pp 110 [illegible]

[illegible] nce from time to time on the subject of hospital ships [illegible] that this is the first book so far as we know to deal [illegible] erchant ship to a hospital ship and put forward [illegible] ministration The author writes with authority, as [illegible] quarter years in medical charge of Naval hospital [illegible] and then of the Plassy In the preface the [illegible] conversion of merchant ships for hospital purposes [illegible] and later a note is made to the effect that these [illegible] well a testimonial to the medical officer, now [illegible] in the days of peace The specifications are of [illegible] indicate the best situations for the various depa[illegible] the only departures suggested are that the laundry [illegible] people and that the disinfector should be in close relati[illegible]

[illegible] tion of hospital ships of the Geneva Convention [illegible] given in Section I Section II opens with a [illegible] discussed some of the points which must be considered [illegible] ships for hospital purposes and then follow two chapters [illegible] of the wards rooms and fittings in the D[illegible] which is superintended by the author at the Cathcart [illegible] are included which will be useful to medical officers [illegible] similar duties In Sections III and IV the details of [illegible] ministration are described including a system of register [illegible] for showing at any particular moment the distri[illegible] nursing staff the occupied and vacant beds and the expenditure [illegible] ing stock of all stores The last named the store register book [illegible] the system of voiding it appears to be an admirable method of picking [illegible] expenditure and remaining stock it is well worthy of the serious attention [illegible] hospital administrators in general Captain P W Bruce of the hospital ship Plassy has designed an improvement of the official cot carrier (illustrated) Both tail boards fit into slots and are removable thus enabling the cot to be run in readily his suggestion that transverse teak wood rollers be fitted into the bottom of the tray does not appear to be an improvement (The type of cot carrier referred to was designed in 1912 by Fleet Surgeon J T Hall and has come into general use since August 1914 It is not quite correct to allude to it as the "official" cot carrier)

Two important items in administration the dieting of patients and the conveying of food to the wards, are not mentioned and we think that too much space is devoted to simple Service forms Experts will cavil at the very large expenditure of fresh water (30 tons per day with no patients, and 40 to 45 tons with patients on board) and at the use of the sick berth staff to look after baggage a duty usually undertaken entirely by the ship's police

The book will be of assistance to all who have to superintend the conversion of merchant ships for hospital purposes and Naval medical officers in particular will find it of interest

THE D[illegible] AND TREATMENT OF VENER[illegible] By L. W. Harrison, D.S.O., Lieutenant-Colonel R.A.M.C., Venereal Diseases, and Officer in Charge, Military Hospital [illegible] Row London: Henry Frowde and Hodder and Stoughton [illegible] Pp. xvii + 482. Coloured plates 16 and text illustrations 370. Price [illegible]

In giving the aim of this work we cannot do better than quote from preface: "There is little doubt that if every member of the medical profession knew thoroughly the simple technique of early diagnosis and treatment of venereal diseases and carried it out the good result would quickly teach the general public that it pays to follow good advice and follow it implicitly. The average medical man has not made sufficient study of venereal diseases to take full advantage of modern knowledge. This book deals with the whole subject from a practical point of view and this is just what the practitioner requires."

The first part deals with the symptomatology and pathology of venereal diseases as they affect different parts of the body and shows how a venereal case should be examined clinically. Differential diagnosis is discussed in a practical manner and special chapters are devoted to the efforts of syphilis on the nervous system. Venereal diseases of women and children are dealt with shortly. Then follows a valuable account of the different methods of taking specimens, the examination of which gives such aid in modern practice. The methods described are practical and can be carried out by any practitioner who follows the instructions. Full details as to how to collect samples of blood serum and cerebrospinal fluid for the Wassermann test are given. The technique of the Wassermann reaction is not given and rightly so for it is better left in the hands of the specialist but it is essential that the practitioner should be capable of taking the necessary samples to send to the specialist and this is admirably set out.

It is also essential that medical men be able to interpret the results of the Wassermann from the specialist's report and here also simple help is given in a chapter which deals with the interpretation of laboratory reports. The various methods of examination for spirochaetes and gonococci are detailed, and a full description of the simple technique required for the dark ground illumination examination of syphilitic fluids is given.

The pathology and treatment of gonorrhoea and its complications are discussed in a practical manner.

The later chapters deal with the treatment of syphilis, and here the practitioner will find a very practical description of the methods of administration of the arsenical preparations. The substitutes for 606 are discussed and their mode of action. The line of treatment which the author has after large experience found the most satisfactory is given under the general management of syphilis and he draws attention to the ill effects of insufficient treatment. An appendix contains some useful prescriptions for venereal treatment.

This book may be summed up as being the standard British text book on venereal diagnosis and treatment. It is up to date and is essentially practical. If every medical man would read it, the resulting benefit not only to his practice but to the nation would be great.

VENEREAL DISEASES AND THEIR PREVENTION. By A. Winkdrick Williams, M.B., C.M., D.P.H. London: H. K. Lewis and Co., Ltd. 1917. Pp. 40. Price 6d. net.

This small book of forty pages is the matter of a lecture given to a soldier audience. It deals with the physiology of self control and indicates conditions of mind and body which are factors in producing sexual irritability. In a few pages a short description of the venereal diseases is given with notes on prevention

The [illegible] ably written [illegible] will be of [illegible] to [illegible] diseases

NERVE WOUNDS STRUCTOMATOLOGY OF PERIPHERAL NERVE WOUNDS LESIONS [illegible] BY WAR WOUNDS By [illegible] le Clerque et de [illegible] de la Salpêtrière Translation by [illegible] B A Revised [illegible] by C A Joll M B M S F R C S London Baillière, Tindall and Cox [illegible] + 317 Illustrations 323 [illegible]

This is essentially an advanced work compiled [illegible] the wealth of material which the war has brought within the sphere of the Charcot clinic under [illegible] Dejerine Although it may be said to make a [illegible] in the treatment of nerve wounds the guiding principles are laid down so definitely and clearly that the medical profession in general will find no difficulty in assimilating them

The clinical examination successively relative to [illegible] muscle vaso motor [illegible] all tissues affected by the governing peripheral nerve renders [illegible] diagnosis almost easy The train of symptoms following the interruption compression irritation and regeneration of a nerve is the result of infinite patience and diligent observation On the other hand the involving note of pseudo neuroses and their simulation to time nerve lesions keeps the reader on the alert to avoid incorrect diagnoses and therefore faulty treatment Electrical reactions and their precise interpretation occupy a prominent position in the process of identifying the degree of injury before operative measures are undertaken The chapter on the choice and method of operative procedure is brief but to the point the axioms set forth are so scrupulously meant as to limit the surgeon to doing the right thing at the right time Only by following such maxims will obsolete blunders be avoided

In conclusion this book has [illegible] the treatment of nerve wounds out of the slough of obscurity and placed it on the firm ground of methodical diagnostic logical surgical interventions and sound post operative technique Such a study of the deformities following injury of each nerve and the corresponding attention to restoring these until the affected limb is functionally restored will in future save many regrets to the surgeon in addition to much suffering and disability to the patient

GLAUCOMA A TEXT BOOK FOR THE STUDENT OF OPHTHALMOLOGY By R H Elliot M D Sc D F R C S Lieutenant Colonel I M S (Ret) London H K Lewis and Co Ltd 1918 Pp xvi + 516 Illustrations 158 including 19 plates (1 coloured) Price 21s

In this book the author of Sclero corneal Trephining (a former publication) takes a more comprehensive view of the whole subject of glaucoma in its anatomy physiology history aetiology diagnosis and treatment

He has endeavoured to present not only his own individual ideas but those also of all surgeons who have left any mark behind them How fully this has been achieved is best realized from the fact that no fewer than 231 different authors are quoted (to one of whom alone there are twenty nine references!) The intimate knowledge shown of their work in this field and of the bearing and import of such work on all questions under discussion is a recurring wonder and delight to the reader The ophthalmic journals up to and inclusive of 1917 are laid under contribution whilst the names of Mr Priestley Smith Mr Treacher Collins Professor Bjerrum Professor Romiee and Professor Thomson are justly and lethal generously acknowledged as sources of valuable help in the matter of illustrations, diagrams field charts and photographs of pathological specimens

The chapter on intra ocular pressure is of absorbing interest and the theories well illustrated and propounded In the vexed question of etiology one is impressed with the author's keen appreciation of all well reasoned opinions based on investigation even when such opinions are not regarded by the author as

probable in the high [illegible] is indicated but where the attitude [illegible] is acclaimed dee credit is given but [illegible] reserved [illegible] right of future knowledge shall be deemed [illegible] of it But [illegible] the attitude [illegible] frankly that of 'open mind' agnosticism [illegible] and hopeful kind whilst in matters of fact he is the cocparing [illegible] looks thought and phraseology which tend to perpetuate ill founded opinions Clarity of thought and expression are revealed on every page terms are strictly defined; whilst a free use of cumerals and letters in the arrangement of the various parts of each chapter together with a habit of summarizing, not only reveal the ordered and [illegible] mind but conduce to the production of a like state in that of the reader

Strong in denial compelling because logical in argument generous in tribute to the work of others and always amicably fair minded the author is to be heartily congratulated upon the production of a volume worthy of a reputation which Glaucoma can not fail to enhance and of a text book for which every student of ophthalmology will be profoundly grateful

Burns and their Treatment, including Dermatitis from High Explosives By J M H Macleod, M A M D F R C P London Henry Frowde and Hodder and Stoughton 1918 Pp xvi + 160 Illustrations 19 Price 5s net

Since the greater proportion of casualties in a naval action of the present day consist of or are complicated by burns the advent of a book with such a title was anticipated with a keen interest Perhaps we expected too much as after reading it through we must confess to a feeling of disappointment

In the general treatment of burns hot baths followed by infusions of normal saline with the addition of adrenalin or pituitary extract are advocated The author appears lukewarm towards the use of morphia in combating shock—an opinion we do not share

Locally the applications of aluminium acetate picric acid, paraffin and other dressings are discussed The open method of allowing healing to take place under a natural scab is fully described, and we agree that this practice of dealing with granulating surfaces might be followed more frequently with advantage A detailed account of the sulphur apparatus as supplied to the Service affords is given and the dressing devised by Staff Surgeon R J Willan, R N V R is illustrated by means of diagrams The chapters on Burns from Electricity Lightning, Corrosives and Dermatitis from High Explosives contain much that is new both with regard to symptomatology and treatment The bibliography at the end of each forms a useful index for reference

The subject matter of the book is good but it suffers from a careless literary style Not infrequently the meaning which the author intends to convey is difficult to follow The reader would derive much benefit and more pleasure from shorter sentences more careful punctuation and not so many ambiguous generalities Such errors in the text as Shafer hypochlorite acid carbolic disinfectant become grave when technical terms are involved The author pleads in the preface that the war is responsible for the publication of the volume but even this does not alter our opinion that it would have been an excellent book had it been well written

Field Sanitation By C G Moor Captain 1st London Sanitary Company R A M C (T) M A Cantab and E A Cooper Captain 1st London Sanitary Company R A M C (T) D Sc Lond London Baillière, Tindall and Cox 1919 Pp viii + 220 Illustrated Price 2s 6d net

This is a thoroughly practical and up to date book, being the outcome of many changes in sanitary work and appliances that have developed during the

War As [illegible] the book [illegible] an appendix [illegible] to the description [illegible] conditions and [illegible] The danger of [illegible] necessity of disposing [illegible] adopted solely with a view of getting rid of [illegible] the burning of faces are now extensively used with great satisfaction [illegible] A good description is given of the octagonal latrine remarking that [illegible] the many objectionable features of the pail system and can [illegible] be made entirely of improvised material The treatment of scaly water is [illegible] problem when large quantities have to be dealt with [illegible] the authors advise that treatment should be made with sodium sulphate in a 10 per cent solution [illegible] Chapter XIV deals with the organization and work of sanitary sections [illegible] is a product of the present War, and in consequence scanty knowledge [illegible] duties has hitherto been available The authors have gathered a [illegible] amount of useful information into a small compass and this book should [illegible] the hands of all interested in the subject

THE THEORY AND PRACTICE OF MASSAGE By Beatrice M Goodall Copestake Examiner to the Incorporated Society of Trained Masseuses Teacher of Massage and Swedish Remedial Exercises to the Nursing Staff of the London Hospital London H K Lewis and Co, Ltd 1917 Pp xvi + 251 Illustrations 56 Price 8s 6d net

The aim of the author of this book is to place before her students in a concise form a resume of the different branches of the science and practice of massage Commencing with a short history of massage she then gives some useful hints to beginners, touching on personality etiquette care of the patient &c Massage Manipulation and the Physiological Effects of Massage are dealt with in two short chapters Practical Massage is dealt with more fully and for each region of the body a concise programme is laid down A good point in these is that in each case the best position both for the patient and for the masseuse is mentioned Passive and active movements are dealt with in a similar manner and a few gymnastic exercises are described but only those which are commonly used as a close adjunct to massage This ends Part I which should serve as a useful hand book for students while attending a practical course of instruction

Part II, which occupies two thirds of the whole volume is devoted to short descriptions of the many and varied surgical and medical conditions in the treatment of which massage is employed Each condition is defined, its symptoms sketched, and the treatment outlined The difficult task of compressing so much information into a small volume has been quite successfully achieved by the author and it should be of assistance to beginners with no medical knowledge

A SYSTEM OF HAND AND FINGER RE EDUCATION (for use in Military Orthopædic Gymnasia) By Captain C W Sewell M C Sherwood Foresters London Baillière Tindall and Cox 1917 Pp 16 Illustrations 9 Price 6d

This small pamphlet describes five methods of exercising the hand and fingers They are chiefly elaborations of the usual creeping ladder—the variations adding interest and a greater number of movements employed The building of models with wooden blocks is strongly recommended In this case a pleasant pastime for the convalescent possesses a distinct curative and re educative factor

HANDBOOK OF OPERATIVE SURGERY By W J de C Wheeler M D Dub F R C S I, Lieutenant Colonel R A M C Third Edition London Baillière Tindall and Cox 1918 Pp viii + 354 Illustrations 226 Price 10s 6d

The main object of this little book is to provide a short manual describing the commoner operations in surgery for those who are called upon to undertake such

dati [illegible] desired experience Men [illegible] in general practice [illegible] either of the Services not [illegible] in the position of an operating surgeon Such [illegible] in this book assistance of a practical kind set forth in a [illegible] style The work is that of an up to date surgeon who has closely [illegible] the precepts of Sir Robert Jones and at the same time has drawn [illegible] from the best of modern text books The various operations are briefly [illegible] the successive steps in each being clearly shown The author's [illegible] for [illegible] too examplifies one of the many useful suggestions to be remembered with advantage

We would suggest that some of the illustrations of the simple instruments such as Giglis saw and Lion forceps might be dispensed with as being unnecessary A fuller description of one operation for gastrostomy preferably Senn's instead of that we would appear better suited to the purpose of the book The diagrams demonstrating the collateral circulations after ligature of vessels should prove most helpful

The book is a good one, well printed and carefully revised We can recommend it with confidence to anyone about to undertake general surgical work

MANUAL OF MEDICINE By Thomas Kirkpatrick Monro M A M D F R F P S Glas Regius Professor of Medicine Univ of Glasgow, and Physician to the Western Infirmary Ninth Edition London Baillière, Tindall and Cox 1917 Pp xxix + 1 046 Price 18s net

In the fourth edition this well known manual has been carefully revised and brought up to date There are many changes in detail as well as other alterations of a more important character Acute poliomyelitis is now placed among the specific infectious diseases and short articles on rat bite fever and trench fever now appear in this section of the book Beri beri and scurvy are now included among constitutional diseases Six new polygraph tracings to assist the student in analysis of cardiac action have been added in Section III Diseases of the ductless glands are more fully considered than in previous editions and acromegaly has been transferred to its appropriate place among them Short accounts of Vincent's angina chronic intestinal enteritis epidemic or trench nephritis and trench foot have been introduced This book is particularly well adapted as a manual for students being comprehensive in scope though of compact size It is written with admirable clearness of style and is well produced

GREEN'S MANUAL OF PATHOLOGY AND MORBID ANATOMY Revised and enlarged by W Cecil Bensonget, M A, M D Oxon F R C P Lond and W W C Topley, M B, B C Cantab—M R C P Lond Twelfth edition London Baillière Tindall and Cox, 1918 Pp x + 603 Plates (coloured) 1 figures in text 243 Price 18s net

This excellent book has been revised throughout and in some parts entirely re-cast There is an excellent account of parasites in three well illustrated chapters a special section being devoted to spirochaetes as their exact biological position is still doubtful The latest knowledge concerning *Spirochaeta tertiae hæmorrhagica* is summarized A foot note draws attention to the very doubtful validity of the term *Treponema pallidum* as implying that *S pallida* belongs to a separate genus on assumption by no means warranted Immunity is now dealt with in a separate chapter the latest developments and the factors involved in infection and resistance being fully considered The chapter on Diseases of the Blood has been re written the normal constitution of the blood and the various alterations which may occur in health and disease being discussed An

instructive [illegible] the various types of leukæmia, [illegible] that it is still wiser to regard them as [illegible]

No few [illegible] eight new [illegible] appear including four coloured plates while many of the older drawings in consequence are omitted the production throughout is excellent The editors are to be congratulated in fully maintaining the high standard of this reliable manual

ENCYCLOPÆDIA MEDICA Second edition Under the general editorship of I W Ballantyne M D F R C P Vol v (Felix Mas to Heart) 1917 Edinburgh and London W Green and Son Ltd Pp viii + 765 Plates 9 (4 coloured) and 171 illustrations Price 20s net

The fifth volume of this series attains the same high level for sound information presented in a concise and readable manner which characterized its predecessors Among the large number of articles the Clinical Section dealing with affections of the myocardium and endocardium by Professor Graham Steell at once attracts attention Throughout this essay, on the most important subject in the book, can be discerned the work of an independent and practical mind Being based on the observations of such a keen clinician this dissertation is replete with sage advice With regard to auscultation he writes "One cannot too soon realize the fact that many heart cases run their course from first to last without the development of any murmur and again with reference to the cumulative effect of digitalis a patient may be poisoned without ever having taken a single dose beyond that rightly laid down by authority as safe Examination of the heart by graphic methods includes excellent examples of the erthyl uns with illustrations of the ink polygraph and electro cardiograph Special papers dealing with food general paralysis, glanders, glaucoma, gout, and hay fever will afford the reader a good idea of the ground which this work covers

The two most important surgical articles comprise diseases of the gall bladder and the bile ducts by Professor A W Mayo Robson and fractures by D Arcy Power, F R C S Interesting paragraphs on drugs such as formaldehyde guaiacol and hexamethylene are contributed by John Orr M D but it is manifestly impossible to review these individually

The printing, together with the quality of the paper and binding, leave nothing to be desired We cannot but admire the courage of the publishers in executing such a gigantic work in the face of the difficulties existing at the present time, and offer them our congratulations on such a successful result

News of the Service.

BIRTHS

[illegible]—On [illegible] Lettlake Car wall Road Che[illegible]

[illegible] NSDN [illegible] Boothat York [illegible]

[illegible] Her [illegible]

CASUALTIES

[illegible] ng, at sea Surgeon Proba[illegible] N V R [illegible] Surgeon H N Dale Richards H N (Ret) [illegible] Surgeon [illegible] R (Mad DDS) [illegible] Temporary Surgeon [illegible] R N [illegible] Surgeon Probationer [illegible] R [illegible] N V R

HONOURS AWARDED

[illegible] sh pleased to approve of the award of the foll[illegible]

[illegible] THE DISTINGUISHED SERVICE ORDER

[illegible] Lieut Com[illegible] Wyatt [illegible] R N V R [illegible] Acting Staff Surgeon [illegible]

[illegible]

[illegible] decorat[illegible]

[illegible] MILITARY CROSS

[illegible] R N

[illegible]

[illegible]

[illegible]

[illegible] appointment [illegible] M D R N [illegible] R N

[illegible] of His Majesty [illegible] to be [illegible] Order of [illegible] recognition [illegible] War — [illegible] the Distinguished Conduct Medal to the [illegible] R N

[illegible] R N [illegible] Second Class [illegible] Commander

[illegible] V I E R C I R N [illegible] 1918

[illegible] of His Majesty's Royal Order to be [illegible] Distinguished Order of St Michael and St George, the War [illegible] publications of the said Most Distinguished [illegible] William Basset Smith R N C I [illegible] R N

[illegible] William R [illegible]

[illegible] Fleet Surgeon [illegible] C I E M B H N

[illegible] His Majesty [illegible] Ernest R [illegible] M B R N

[illegible] have been placed [illegible] Deputy Surgeon [illegible] C M G M R C P [illegible] declining, his name as a Fellow

[illegible] of the Royal Humane Society has been awarded to Surgeon [illegible] V R in recognition of his bravery [illegible] in saving a drowning person

---

PROMOTIONS

[illegible] Dunsey D S O R N promoted to rank of Surgeon

[illegible] M B R N promoted to rank of Deputy Surgeon General

[illegible] promoted Acting Rank of Deputy Surgeon General dated [illegible]

[illegible] specially promoted to rank of Fleet Surgeon [illegible] services rendered in the operations in the Belgian Coast [illegible] M B specially promoted to rank of Staff Surgeon dated [illegible] rendered in the operations in the Belgian Coast [illegible] promoted to rank of Staff Surgeon dated Nov 6 1918 — [illegible] R Stephens M B Fred C Allum M B [illegible] O Sykes M B Robert V Mitchell M B Ernest [illegible] George Alexander Sanders M B Matthew F [illegible] H Lucas M B [illegible] — [illegible] promoted to rank of Fleet Surgeon dated Dec 10 1918 — William H Harrison W [illegible] Frank [illegible] R [illegible] Atkins B A M B Charles J D Connell

[illegible] to be Consulting Surgeon to the Forces at Malta, vice Staff Surgeon [illegible] M.B. Staff Surgeon William Carson, George A. Hartley, Joseph [illegible] M.B., William B. Fisher, Edward L. Atkinson, Frederick C. Hitch, M.B., Francis [illegible] M.B., William Bradbury, M.D., Arthur A. Sanders, M.B., John Hadden, M.B., Edward S. Irwin, M.B., Henry H. [illegible], M.B., Roderick J. C. Purcell, John H. B. Mason, M.B., B.A., Frank L. Smith, Charles D. Hill, M.B., Thomas C. Patterson, M.D., Martin H. Laughlin, M.B., C., Archibald Paulet, M.B., William G. Heath, C. J. G. Spencer, Alfred Roesch, M.B., William H. King, Horace B. R. Surphlis, M.B., Francis C. Allen, M.D., Dennis Loughlin, M.D., C., M.B., Charles F. O. Saulez, M.B., Douglas A. Mitchell, M.B., Ernest Montgomery, Arthur Jones, M.B., Maurice C. Mason, Alexander S. Barrow, M.B., Matthew F. Caldwell, M.B., Robert N. W. W. Biddulph, Ernest J. Markham, M.D.

APPOINTMENTS.

Medical.

Head Surgeons: H. T. Tomlinson to the Victory, to add. M. H. Knapp to D. V. M. S. H. Lightfoot to R. M. Depot Shorncliffe. H. L. Smith to the Excellent, add. H. V. Wells to the President, add. M. P. Jones to the Contagious. S. H. Dancy to the Mount. A. T. Hallett, M.B., to the Pembroke. S. T. Reed to the Vivid, add. J. Tisdale, M.B., to the Victory, add. S. T. Reed to the Marlborough. C. H. J. R. Linson to the Leviathan. J. Mead, add. M.B., to the Victory, add. E. Folliott to the Vivid, add. J. F. H. Phillips to the Vulcan, add.

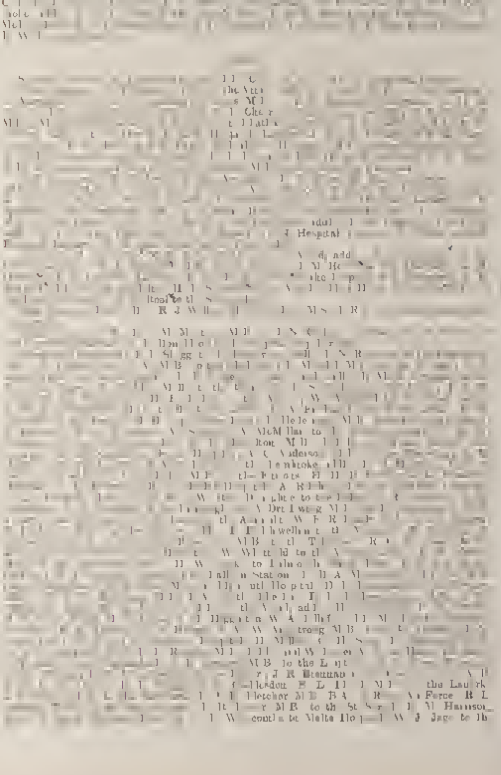
Staff Surgeons: W. B. Smith to the Kingfisher. R. F. Mackenzie to the St. George. J. T. Rutherford, M.B., to the Vindex. J. Hudson, M.B., to the Lancaster. H. F. Boggs, M.B., to the Haslar Hospital. A. C. Valentine Finch to the Vulcan. W. T. Woolcott to the Edgar. G. T. Baxter to the Victory, add. A. B. Daniel, M.B., to the Sevenoaks. J. S. Aitken, M.B., to the Cygnet. K. H. Hole, M.D., to the Lucia. Jas. Mitchinson to the Hirondelle. C. A. C. Phipps to the Pembroke, add. D. T. Aldridge Scott, M.B., to the Victory, add.

Surgeons: B. P. Spencer to the Victory, add. J. B. Hill to the Conqueror. A. J. Turner, B.A., to Leslie, Wainwright Hospital. H. M. Wilder to the Victory. M. J. Yeldham, M.B., to the Foresight. H. S. Y. White to the Presumption. A. L. Parker, B.A., to Hampstead Military Hospital.

Staff Surgeon: R. N. V. R. W. K. Wells, M.B., to the Vivid, add.

Surgeon: R. N. V. R. C. S. M. Morison to the Vivid, add. C. T. D. T. to Hampstead Military Hospital. H. Gibb, F.R.C.S., M.B., to the Imperieuse.

Temporary Surgeons: H. Balsillie, M.B., to the West India. W. J. Sterrett, M.B., to the Lankokoko, add. L. D. D. Davies, R.M. Camp, Shoeburyness. R. S. [illegible] Cardiff Balloon Station. W. S. O'Loughlin to the Alexandra. J. H. Hooper, M.D., to H. Leviathan. W. E. Willis to Dungarvan Military Hospital. T. C. H. Allen, M.B., to R.N. Asylum, Yarmouth. A. S. Mackie, M.B., to the Pembroke, add. W. R. Beatty, B.A., to the Vivid, add. C. McDonald, M.B., to the Cruiser. N. B. Slater, M.D., to the Victory, add. G. J. M. Hungerford to the Tokomaru. A. A. Coleman to the Victory, add. T. C. Blackwell, M.D., to the Queen Victoria. A. T. Lockwood, M.B., R.M.A. Portsmouth. E. Attenborough to Chatham Hospital. J. B. Duncan, M.B., to Haslar Hospital. A. G. Williams to Haslar Hospital. R. G. Magee to the Vivid, add. H. Wilkie to the Victory, add. A. R. Hale to Haslar Hospital. J. T. R. Rose to the Latona. H. T. Hoolman, M.D., to R.N. Barracks, Sheerness. J. J. Teague to the Cygnet. B. Flack to the Clio. A. C. C. Craig, M.B., to the Sandfly. J. C. Sinclair, M.B., to the Humphrey. J. M. Fraser, M.B., to the Marsh. J. N. H. Robertson to the Agincourt. E. J. Lloyd, M.B., to the Asia. J. H. B. King, M.D., to the Narcissus. J. M. Hunter to the Hindustan. J. R. Alison, M.B., to H. to the Limbrick, add. S. J. Shaw to the Acteon. S. J. F. M. Jayne to the Vulcan, add. R. D. Fitzhardinge to the Indus. A. L. Barrett to the Vivid, add. R. D. Brunton, M.B., to the Cygnet, add. R. J. Magill, M.D., to the Cygnet, add. C. J. Terrell, M.B., to the Bristol. F. T. Mac M. [illegible] to the Vernon, add. W. A. Eaton to the Leviathan. J. T. Hopkins to the Lucia. J. H. Hunter, M.B., to the Amethyst. F. R. S. Thomas, M.B., to R.N. Sick Quarters, Hong Kong. H. C. Bell, B.A., to the Victory. H. C. Mason, M.D., to Malta Hospital. A. F. Wyatt to the Vivid, add. H. Harris, M.B., to the Duke of Cornwall. J. B. Mulvey, M.B., to the Victory. H. Hughes, M.D., to the Victory, add. W. T. Clegg, M.B., to the Victory. H. T. W. M. Nesbitt, M.B., to the Victory, add. J. Dullea, M.B., to Cetewayo's Station, Natal. H. F. B. Eaton to the Victory. N. A. S. Campbell, M.B., to the Victory, add. M. [illegible] to the Victory. W. Higgins, M.B., to the Victory, add. W. Hughes, M.B., to the Alexandra. H. H. [illegible], M.D., to the Victory. R. [illegible] A. J. Hamilton, M.B., to the Victory. W. S. [illegible], M.B., to the Victory. J. Bell, M.B., to the Victory. J. Bell, M.B., to the Victory. H. S. Hampton, R.N. Sick Quarters, M.B., to the Victory. H. Collins, M.B., to the Victory. A. F. Wauchope, M.B., to the Victory. W. Woodall, M.B., to the Victory.



[illegible]

ADMIRALTY ORDERS ISSUED FROM MARCH 1 1918, TO MAY 31, 1918

(It is the more important Orders [illegible] to the duties of Medical Officers afloat [illegible] not confidential, [illegible] included.)

802.—Naval Ratings under Sentence in Military Detention Barracks—Medical Certificate

(N L [illegible] 10[illegible]—[illegible] 1918.)

In all cases where men serving under the Naval Discipline Act are committed to a Military Detention Barrack to undergo punishment the medical certificate which accompanies them is to [illegible] to show whether they are suitable for Sea Service or Shore Service, in order that he may be placed on the proper side of the Detention Barrack.

(This Order will be included in the April M.O.s.)

805.—Dental Treatment—R.N.R. (T) Ratings

(N [illegible] 1918.)

[illegible] dental treatment in the case of R.N.R. (T) ratings is not to be undertaken unless [illegible] is necessary and treatment is necessary and in no case should dental [illegible] more than three months is to elapse before treatment is undertaken. Time before [illegible] dental—[illegible]

[illegible] Admiralty is permit which it is intended that the [illegible] dental.

(This Order will be included in the April M.O.s.)

873 Temporary Surgeons—Transfer to Permanent List.

(C.W. —14.4.1918.)

[illegible] paragraph of the Regulations of [illegible] should be amended to read as follows:—

[illegible] into the permanent service during the period of the War. [illegible] be eligible [illegible] after [illegible] from the date of the transfer to the permanent [illegible] down for Officer on Trial [illegible] Withdrawal [illegible] the war.

(M.O. 871.18.)

1062 Medical Officers

[illegible] States

(C.W. 28.1.1918.)

[illegible] Medical Officers [illegible] imposed [illegible] allowances [illegible] Naval [illegible] Navy.

(This Order will be included in the May M.O.s.)

1079.—Health—Weekly Report

(M D G [illegible] 1665/18—28 3 1918.)

[illegible] the numbers of cases of venereal disease admitted [illegible] included in Weekly Report of Health [illegible] [illegible] the Hospital [illegible] during the week are required [illegible]

(W O 809/16 is cancelled.)

1258.—Acidum Aceticum Glaciale

(M D G 4419/18—11 4 1918.)

Ow[illegible] the [illegible] supplies of this [illegible] and the quantity [illegible] the Service [illegible] reduced to 1 oz for each class of medicine [illegible] and above [illegible] to be returned to the Naval Medical [illegible] opportunity.

(This Order will be included in the May M.D.O.s)

1339.—Christie Tissue

(M D G 4486/18.—21 4 1918.)

Owing to difficulty in obtaining supplies, Christie Tissue will not be [illegible] Hospital Stores [illegible] after the existing stocks are exhausted. [illegible] of Oiled Cloth [illegible] if required.

(This Order will be included in the May M.D.O.s)

*1446.—Surgeons, R N V R.—Transfer to Permanent List of Surgeons, R N

(C W 21788.—2 5 1918.)

The conditions laid down in M O s 334/18 and 873/18 regarding the transfer of Temporary Surgeons, R.N., to the Permanent List are applicable also to Surgeons, R.N.V.R.

The Commissions of any Surgeons, R.N.V.R., so transferred would not be [illegible] prior to the cessation of [illegible].

(M O s 334/18 and 873/18.)

1465.—Syphilis Records—Control

(M D G —1 5 1918.)

Some Medical Officers of Ships and Establishments are [illegible] the Syphilis Case Sheet (Form M 191) by the Royal Naval Hospitals Haslar, Plymouth and Chatham.

Important [illegible] are to make every effort to send the blood samples at the times requested [illegible] to the Hospital indicated on the Syphilis Case Sheet (Haslar, Plymouth or Chatham) together with the reference number and the information required by M O 3367/16.

2 If it is impossible to send the blood to an Establishment other than that indicated on Form M 191, the reference number and information [illegible] should be attached, and the Establishment [illegible] to forward the result to the Hospital at which the case was originally treated.

[illegible] If the patient is admitted for relapse of Syphilis to a Hospital other than that indicated on Form M 191, the Hospital admitting him should forward a short and concise account of his clinical condition and treatment to the Hospital at which he was originally treated.

(M O 3367/16.)

1598.—Surgeon Probationers, R N V R.—Demobilisation

(C W 20001—18 5 1918.)

Surgeon Probationers, R.N.V.R., when they have completed six months' service afloat at home or twelve months' active service afloat abroad, will be demobilised or allowed to resign at their own request.

The request for demobilisation must be submitted to the Commanding Officer at least [illegible] months before the term of service expires.

Requests for demobilisation are to be accompanied by :—

(a) A statement of willingness to rejoin as a temporary Surgeon, R.N., when qualified, if the applicant's services are then required.
(b) A certificate from the Commanding Officer showing the conduct and [illegible] of the Surgeon Probationer concerned.
(c) A certificate from the Dean of his medical school stating the earliest date at which the Surgeon Probationer can sit for his final examination.

[illegible]

[illegible]

1707.—Medical Reports in Hospital Cases: Officers and Men

(M.D.C. 6253/18.—23.5.1918.)

[illegible] questions now arising with regard to (i) assessment of disability of officers [illegible] (ii) how does pension in the case of detail of officers and men and (iii) relation [illegible] Medical Officers when discharging patients to hospital. Hospital Slip or [illegible] particularly note in forms M.188 or M.82 such facts as to prior or illness [illegible] to enable to give information as to whether the disease or disablement was [illegible] or subsequently developed.

(This Order will be included in the July M.O.s.)

1708.—Botulism

(M.D.C. 6.86/18.—23.5.1918.)

[illegible] Medical Officers are drawn to the following Memorandum [illegible] Symptoms.—

[illegible] hospital number of cases have occurred in this country which [illegible] clinical nature [illegible] with this rare disease [illegible]

[illegible] have been observed both in children and adults although [illegible]

[illegible] understood that but one or two cases of botulism have been proved [illegible] complete and systematic review of the lead of patients [illegible] possible sources of infection.

[illegible] and Malaghan and [illegible] other than a gastroenteritis has been made that [illegible] of unusual distribution [illegible] in various systems.

[illegible] stated the duration of the illness has varied from six weeks to longer [illegible]

[illegible] low-idea is gradual. The one constant symptom is the rapid [illegible] or drowsiness. This [illegible] the most pronounced symptom [illegible] it is the disease becomes completely unconscious. The [illegible]

[illegible] muscles. The pulse is [illegible] rapid.

[illegible] physical in the earlier stages of the illness [illegible] fully. The cheeks are marked symptoms in some cases [illegible] muscles of mastication are affected by the 3rd nerve [illegible] symptoms. As a result of the weakness [illegible] the general appearance [illegible] mask like appearance [illegible] Rather [illegible] frequently [illegible]

[illegible] the mouth, if [illegible] may be some dysphagia. The [illegible] credit on may simulate insanity [illegible]

[illegible] of the source cases so far observed [illegible]

[illegible] will be included in the July M.O.s.)

1779.—Surgeons—Examination for Promotion

(M.W.—30.5.1918.)

[illegible] 12 months (inclusive). Surgeons will not be required [illegible] to qualify for promotion [illegible] effect is from the beginning of the war [illegible] be included in the July M.O.s.)

OBITUARY

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] or the [illegible]
It could not [illegible]
exposed to th[illegible]
[illegible] with [illegible]
[illegible] to the [illegible]
[illegible]
[illegible] effect [illegible]
and bel[illegible] the war [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Notices.

The Editor invites Medical Officers to send in Original Papers on professional subjects travel personal experiences &c. Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations

All Articles or Communications published in the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE will become the property of the Journal with full copyright powers, unless the author declares when sending the Article that he desires to reserve the copyright to himself

Notices of Births Marriages and Deaths are inserted free of charge to subscribers

All Communications should reach the Editor on or before the 15th of the month preceding the date of issue Unless clearly written, they should be typed in order to avoid mistakes and they should be addressed to The Editor JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE, Admiralty Medical Department, 12, Charles Street, Berkeley Square London, W 1

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GALYL is as effective as **SALVARSAN** or **NEOSALVARSAN** on Spirochaetes and Trypanosomes, more rapid in action and free from the neurotropic and congestive action of these preparations

50,000 Injections administered in Naval, Military and General Hospitals, have demonstrated that it is efficient, rapid and well tolerated

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After 5,000 Injections [illegible] Surgeon [illegible]

Staff Surgeon [illegible]

No case has given the slightest cause for anxiety and the clinical results are very satisfactory

[illegible]

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is supplied in [illegible] Solution [illegible] [illegible] [illegible] [illegible]

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[illegible]

OPOLAXYL [illegible]

[illegible]

OPOLAXYL [illegible]

[illegible]

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Journal

of the

Royal Naval Medical Service.

Original Articles.

DENTAL TREATMENT IN THE NAVY: THE PURSUIT OF THE IDEAL AND THE PRACTICAL.

By Dental Surgeon-Lieutenant-Commander RICHARDS, R.N.V.R.
H.M.S. Cumberland (Hospital Ship).

Less than fifteen years ago the first dental surgeon was appointed to His Majesty's Navy, and since then the staff was gradually increased until the outbreak of the War. Since August 1914 the number of dental surgeons attached has doubled, which fact alone shows the necessity for dental treatment and the ever-increasing importance attached to good teeth, in regard to general health, by the Lords Commissioners of the Admiralty and by the Medical Department.

It was fortunate that there had been two years of experimental dental treatment during peace, as in that time not only had important studies been made in improving the teeth of the men in the Navy, but a larger work had been devised which was sufficiently elastic to cope with the extra burdens demanded by the sudden necessity for expansion. Meanwhile during this period the prejudices of the men themselves had been gained, and they had appreciated through experience the value of dentistry and showed a distinctly gratifying desire to dental treatment whenever possible. In the experimental stage it was impossible to have regular organized treatment for all the men, but the progress of the work and the interest (and desire) for it have grown rapidly, in fact that the time should now be ripe for an attempt at a start to be made in the direction of regular inspection and treatment.

It may be argued that the present moment is unsuitable for such a scheme, but the opportunity, that is, the time, probably will be efficiency result. The scheme I am about to outline is one which I

[illegible]

[illegible]

[illegible]

[illegible] generally [illegible] treatment [illegible] examination [illegible] cavities [illegible] not [illegible] treatment [illegible] plus the [illegible] necessary [illegible] and filling [illegible] each [illegible] fillings [illegible] be [illegible] be required for treatment [illegible] Dental caries is a disease the [illegible] before maturity is reached and in which [illegible] the effects of neglect in childhood [illegible] during this period they would [illegible] attention.

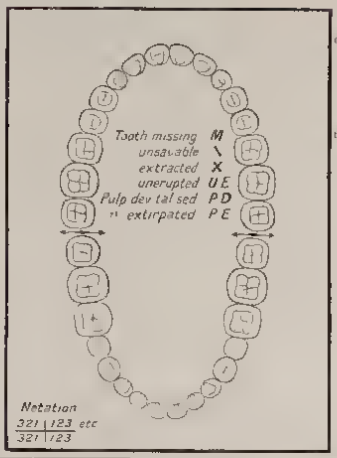
On the Lists already mentioned [illegible] dental surgeon to inspect 500 boys [illegible] in progress if [illegible] 1,000 previously treated [illegible] the boys second [illegible] made [illegible] dealt with 2,000 in inspection [illegible] examination of the 2,000 [illegible] be possible for fifty [illegible] per annum [illegible] 10,000 [illegible] a partially [illegible] attained it would be necessary [illegible] possible to [illegible] Thus in Everyman's [illegible] replacement by artificial [illegible] teeth with their natural [illegible]

The only way to attempt [illegible] is to fix a day after which no permanent [illegible] the Service shall be dealt with as sea without [illegible] and that such a ruling shall afterward [illegible] further necessary treatment completed [illegible] would be necessary to adopt some system [illegible] chart which could be attached [illegible] I append a suggested chart for the [illegible] modifications could be made but [illegible] detailed. At the first examination the mouth should be [illegible] and all work done subsequently should be noted [illegible] and signed by the operating dental surgeon not [illegible] would then have to present himself [illegible] within [illegible] from that date and I do not think the [illegible] difficulty is that a medical officer would have the [illegible] that the [illegible] was [illegible] and it should be made [illegible] treatment to [illegible] examinations.

I have made the suggestion [illegible] with a view to avoiding any unnecessary [illegible] should be kept [illegible] remarks on the general condition [illegible] references to [illegible] difficulties in [illegible] cases is likely [illegible] rapidly and such [illegible] glance by the medical [illegible] Concurrent [illegible] in the daily [illegible] by the dental surgeon [illegible] many columns [illegible] new to be ruled and the [illegible] we have found the following headings which [illegible] with those of the quarterly return forms if advantage —

Original Cases	Cases	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

As a matter of fact a chart has already been [illegible] having the same details but with the additional advantage of keeping the work daily monthly and quarterly which has been used at Shotley Training Establishment for the past two years and it has been the means of not only greatly simplifying the dental quarterly returns but also makes the record of dental work absolutely accurate. The utility of this chart would be more appreciated if it were adopted as a standard throughout the Service.



[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Aug. [illegible] 1916	[illegible]	Amalgam fill	Devonport Branch	[illegible] Jones	[illegible]
[illegible]	[illegible]	Ext. [illegible]			[illegible]
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			[illegible]
[illegible] 3 [illegible]	[illegible]	Amalgam fill	[illegible] Branch	[illegible]	[illegible]
[illegible]	[illegible]	Amalgam fill	[illegible] Branch	[illegible]	[illegible]
Aug.	[illegible]		[illegible]	[illegible] Campbell	[illegible]

[illegible]

[illegible]

[illegible] SIGHT TESTS

[illegible]

[illegible] colour [illegible] examination [illegible] cases [illegible] this but [illegible] medical [illegible] to others.

[illegible] test [illegible] the total [illegible]

It was found that [illegible] by the Admiralty the [illegible] with the test type that [illegible] This was difficult to explain [illegible] the end of [illegible] series I used a test type [illegible] recently purchased [illegible] partly due to the fact that [illegible] has not a good white [illegible] ing the letters in the [illegible] black colour. In fact [illegible] difference test (the power of [illegible] intensity of colour). This was [illegible] who first gave [illegible] but after [illegible] gave [illegible] several other [illegible] being that these [illegible] influenced by adaptation [illegible] and similar cases to which [illegible]

A consideration of the [illegible] that this test (light difference) [illegible] test (in the realm of [illegible] light difference do not always [illegible] whose vision is [illegible] from similar [illegible] that a man may have a certain amount of astigmatism and [illegible] pletely but [illegible] of light difference [illegible] pick up objects.

Light difference is perhaps best tested by means of the special [illegible] of Professor Bjerrum of Copenhagen which is similar to Snellen's type

[illegible] Possibly some men [illegible] unusual surroundings [illegible] engaged in conversation [illegible] they are used to their surroundings [illegible] test. It is here that a second test [illegible]

There are cases where it is [illegible] capability for the work at hand [illegible] efforts of training must be taken [illegible] using a periscope it is crucial to pick up [illegible] ing is an important factor in estimating the value of a man. A well trained man with relatively poor eyesight is probably better than a dull witted individual with excellent vision. A well trained man should therefore not lightly be disqualified should his vision slightly deteriorate.

Imperfect Test Type.—From practical experience it is found that if a man sees [illegible] with the Service test type he has vision and if he sees [illegible] partly that he has usually vision. This is however too rough a test to adopt permanently. The important feature is that he should see quickly and be able to read quickly what letters he can see. I would recommend therefore that until well printed types are supplied partly should be accepted as the standard but that these letters must be read quickly.

The faults of the Service type are:

(1) Poor printing.

(2) The necessity for mounting after being mounted they greatly lose their white colour if merely pasted up they do not present a [illegible]

The requirements are:—

(1) Good printing, on [illegible] card board.

(2) A frame fixed upon a well lighted situation on which the board can be shipped and reversed when not in use.

(3) An alternative card.

(4) The new boards should have a [illegible] line.

No eye specialist I have seen [illegible] in the Service has used [illegible] board.

Of course an imperfect test type is not really [illegible] testing, unless a rigid standard is laid down [illegible] and always be checked by the observer [illegible]

A very useful type of apparatus is that [illegible] by Surgeon [illegible] the hospital ship "Garth Castle." He has [illegible] pasted on which are two minimum test types and [illegible]

[illegible]

[illegible]

[illegible]

EXAMINATION FOR EFFECTIVE VISION IN THE NAVY

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] the pupils artificially [illegible] relaxing [illegible] dark [illegible] does not [illegible] Hom [illegible] paralyse the [illegible] than a few [illegible] well dilated [illegible] four [illegible]

[illegible] fundus oculi. The [illegible] they do any *objective* [illegible] could account for the [illegible] examination of the vision [illegible] which are not always [illegible] Where a large number of cases [illegible] from this [illegible] in a large percentage [illegible] made by the indirect method for with [illegible] seen that way and a large number of cases [illegible] However retinoscopy does not show an error [illegible] and no gross lesion can be seen a [illegible] method should always be done. The [illegible] which obtains in civil hospitals because [illegible] but in view. In these establishments [illegible] the pupils of ordering correcting glasses [illegible] get a satisfactory *objective* symptom [illegible] of the vision. If we are not constantly [illegible] forget the rules of the shadow move [illegible] letters M A P we have always a key to the [illegible] These letters indicate that in *myopia* the [illegible] light reflexion from a *plain* mirror. There [illegible] it would indicate hypermetropia with the [illegible] mirror it would be just the opposite and [illegible] shadow moved against with a curved

[illegible] With [illegible] Lapture [illegible] myopia

Note — [illegible] the [illegible] perfect refraction) [illegible] myopic [illegible] diopter [illegible] myopic [illegible]

In this [illegible] is difficult to recognize. [illegible] put successively [illegible] then the movement will [illegible] truly be [illegible] them. Remember [illegible] of the shadow [illegible]

Conditions [illegible] movement [illegible] recognize —

(1) Exactly [illegible]

(2) A very high [illegible] twenty [illegible] this becomes [illegible] he seen

(3) A very [illegible] when [illegible]

(4) Pupil for some [illegible] contracted [illegible]

(5) Marked opacities [illegible] refracting [illegible]

(6) An artificial eye

(7) Working with [illegible] light

(8) Conical cornea

It is a good thing for [illegible] wishing to learn [illegible] putting various lenses in front of a dilated pupil [illegible] the movement and appearance of the shadow [illegible] tive errors. Particularly should [illegible] cylinders are used.

In cases of astigmatism the shadow traverses [illegible] higher error is inclined to resume that of the lower [illegible] particular is required together with careful observation [illegible] difficulty. It will be seen that it is the shadow in [illegible] noticed that in the opposite one becomes more [illegible] shadow is difficult to see the condition may be [illegible] the patient to look a little away from the mirror [illegible] observers [illegible] when the shadow which [illegible] detected can be clearly seen. Having recognized the [illegible] take long to monitorize its movement in both [illegible] the lens that will [illegible] in noting what it is. [illegible] How should he do it. Should the second eye [illegible] first try the latter again to make sure the first [illegible]

In astigmatism take very accurate observations [illegible] defect is found by retinoscopy should [illegible] exhaust [illegible]

[illegible] With [illegible] opens it [illegible] would [illegible] but [illegible] of the [illegible]

[illegible] of [illegible] copy [illegible] lens gives [illegible] by the point of the [illegible] instance [illegible] that [illegible] with the third lens the [illegible]

[illegible] places in the [illegible]

[illegible] the [illegible] + 5 [illegible] + [illegible] together [illegible]

[illegible]

[illegible]

[illegible] Another

[illegible]

[illegible]

[illegible]

same a[illegible] will read more than [illegible]

(d) When [illegible] handkerchief [illegible] simulate sniff[illegible] politeness will [illegible] and pick it up without trouble.

As a last word [illegible] hope that the [illegible] impression that [illegible] simulated amours [illegible] if it does not [illegible] occur but [illegible] very low [illegible]

OPHTHALMIC METHODS FOR USE ON BOARD SHIP

By Temporary Surgeon FREDERICK C S BROOME R N

Medical officers of ships have nowadays to carry out a considerable amount of work which hitherto has been the undisputed province of the oculist The requirements of M O 1,606 18—eyesight tests range-takers director-layers, &c—cover a large field and demand considerable skill and experience in their applications, and, in addition, considerable ingenuity is called for in the improvisation and adaptation of apparatus for the various tests which this order specifies

The ophthalmic instruments and apparatus supplied by the Admiralty though doubtless excellent for their original purposes do not include many of the pieces of gear that are specified in the text book accounts of methods of examination It would be well for us to examine the types of error that these visual tests are calculated to elucidate Defective vision roughly falls into four main classes, viz (1) *Hypermetropia* is associated with an eye in which the focal length is longer than the principal axis Hypermetropia may be latent or manifest according to whether muscular accommodation is capable of bringing the image to a focus on the retina or not

(2) *Myopia* is commonly associated with an eye in which the focal length is shorter than the principal axis

(3) *Astigmatism* associated with an eye in which one meridian of the cornea is of a different curvature to other meridians

Note.—In astigmatism it is usual to take the two principal meridians at right angles to each other and estimate the curvature along them

(4) Malformation injuries or diseases of the eye

The least easily discovered and the most troublesome of these defects is astigmatism, which of course may be combined with either myopia or hypermetropia If it is present in a large degree or if it is present combined with a moderate degree of either M or H the subject will fail to read $\frac{6}{6}$ against Snellen's type and will be in consequence rejected If, however there should exist a small degree of astigmatism alone or with small degree of spherical error it may quite easily happen that the patient will read $\frac{6}{6}$ or even more Should the patient continue to use his vision to its maximum extent which occurs in the use of a telescope or binoculars, or even working at fine work or writing by artificial light, symptoms of accommodative asthenopia of a more or less severe nature are almost always the inevitable result For that reason it has been laid down that the men most likely to develop these symptoms i e, director layers and range takers are to be examined by retinoscopy with the object of detecting latent astigmatism if present It should be realized that many other officers and men run similar risks In any case in which an officer or man uses optical instruments or does fine work by artificial light, I do

not think it justifiable to conclude that the cause of headache, vertigo, &c. is not due to visual errors simply on the evidence that the patient can read Snellen's. In every case retinoscopic examination is the sole conclusive method of eliminating the possibility of refractive errors.

Free there are certain auxiliary tests that we may improvise in the absence of the more elaborate apparatus and technique that are required for retinoscopic examination. These should not, however, be allowed to prejudice our judgment which should not be formed until a retinoscopy has been performed. A pin hole in a sheet of cardboard will often enable an astigmatic patient to pick out the various confusion figures that are usually illustrated in ophthalmic text books, the commonest of which is the spokes of a wheel figure. This test is purely subjective and one has to rely on the patient's veracity and intelligence in deducing an opinion from it. Probably the most useful method is to forbid reading and any kind of work or recreation that is likely to cause eyestrain until such time as the patient has become entirely free from eye fatigue symptoms. Then he is allowed—rather encouraged—to use high-power binoculars or to take ranges with a range-finder for several hours consecutively. Almost invariably this performance will bring on a return of the original eyestrain and one can then conclude that there is some hitherto refractive error present.

Purely spherical errors—hypermetropia and myopia—may be present in small degrees with visual acuity 6/6 against Snellen's. Since however these are fully compensated for by the focusing scale of the particular optical instrument in use they are not likely to cause much trouble unless associated with defective muscle balance. Larger degrees of hypermetropia and myopia can also be corrected in the same way and it is a matter of opinion whether a visual acuity of less than 6/6 is necessarily a disability that is sufficient to render a man unfit for these duties. As however the visual standard laid down is 6/6 against Snellen's type, this is beside the point.

The various malformations, diseases, &c. which comprise Class 4 of the classification above are so numerous and varied that no rules can be laid down. One state might be emphasized in passing to wit that of abnormal sensitiveness to light. Certain cases do occur in which light, particularly glaring sunlight or electric light, does produce reactions far above the normal. Such cases are unsuitable for duties which involve the use of optical instruments of high power. Night blindness is too rare a condition to call for comment beyond that the disability is obvious. One might also remark that the combination of unshaded electric light and white paint is too common and too destructive a cause of eyestrain and irritation on board ship to be allowed to pass without protest.

In concluding these notes on types of defective vision one must remark that the age of the case should always be noted. Early presbyopia may manifest itself at any age over the middle thirties, and the symptoms of

[illegible] more [illegible]

[illegible]

[illegible] Colour Vision

[illegible] colour [illegible] what is called colour centre in [illegible] supplied in a great number of different colour shades, and the case to be examined is instructed to divide them into the four colours—red, green yellow and blue The patient has to exercise his colour judgment in classifying the various shades and modified colours at the heads with the result that any confusion of colour is easily manifested to the surgeon at the conclusion of the test Its great advantages over other tests are its simplicity its thoroughness and the absence of any need to name shades the knowledge of colour names being not usually very extensive in the masculine mind There is a minimum of risk in this test of the patient being able to either bluff or guess successfully

A Convenient Method in Examining Field of Vision without the use of Perimeter

Case to be examined should be seated in front of, and about one metre from a dark background (a dark coloured curtain is suitable) His chin should be rested on some firm foundation such as the back of a chair or a pile of books in order that there shall be no movement of the head during the test The eye should be covered with a loose opaque bandage or eye shield and a small white object on the level of the patient's eyes should be placed in front of him at the distance of about one metre or rather less (a circular piece of white paper of diameter ½ in pinned on curtain or other background is suitable) Another piece of white paper of same shape and size fixed on the end of a penholder is then taken and while the patient is instructed to keep his eye fixed continuously on the object spot (the first white paper disc) the second object is moved into his field of vision and the patient is instructed to say when the second object becomes visible When once visible, the object is moved away again in the same direction along which it originally came, and the patient is told to say when it vanishes The mean of these two points is the limit of the field of vision in that particular direction

This process is repeated along a series of radii (vertically horizontally &c), and the result which is obtained is an approximation of the field of vision for the eye examined Normally the field of vision will be greater on the outer and lower regions (temporal and infra orbital regions) and more contracted on the upper and inner regions (frontal and nasal regions) in the latter case on account of the obstruction to vision caused by overhanging eyebrows and the prominence of the nose

The process is then repeated for the second eye and both helps [illegible] vision [illegible] The distance that the second object (the moving slip of paper) is held in front of the face is arbitrary and does not affect the result provided that it is kept constant for all radii, since one is attempting to measure an angle and not a distance

Method of Examining Muscle Balance by the Use of Maddox Rods

Normal muscle balance is the co-ordination of the external orbital muscles whereby each eye is trained directly on the object of vision in binocular vision, and it results in perfect fusion of images Unless this muscle balance is kept up without overaction of any muscle or group of muscles either double vision or muscle fatigue (eyestrain) will result

In estimating muscle balance it is found more convenient to examine the fusion of images, rather than to attempt to estimate the relative degree of "tone" of the orbital muscles Therefore it is desirable to have the images formed by each eye differentiated so that any failure of complete fusion may be more easily detected

A Maddox rod is a series of parallel glass rods (coloured red) which have the property of turning a point of light (such as a candle flame) into a line of light so that if the Maddox rod is held before one eye and the person being examined looks at a candle flame he sees the flame (the image formed on the uncovered retina) intersected by a red line of light (the image formed on the retina of the eye covered by the Maddox rod) In normal muscle balance the red line of light will intersect the candle flame no matter in what direction the Maddox rod is rotated In failure of muscle balance the red line will not intersect the candle flame when the Maddox rod is held in certain positions but will lie above below or to the side of the candle flame according to what type of error is present

The only points necessary to be observed in this test are (1) A dark room (2) candle must be about 6 metres distant (3) it is preferable to examine each eye in turn

ANTIPERISTALSIS IN LARGE INTESTINE

By Dean Sumner [illegible] Smithsonian [illegible]

Antiperistalsis in the colon may be [illegible] pathological.

Cannon [1] was one of the first to investigate the [illegible] intestines by experiments on cats. He used [illegible] much liked by the cats—mixed with subnitrate [illegible] portion of one fourth to one third of [illegible]. He found that the contractions going on in the small intestine [illegible] segments, with the result that it was mixed [illegible] then brought into contact with the absorbing [illegible] contractions also emptied the venous and lymphatic [illegible] by compression of the intestinal wall [illegible] with segmentation that is as the food [illegible] which separated one end from the main body [illegible] momentary for the two masses were soon united [illegible] the [illegible] material was pushed onward until another [illegible] repeated the process described. The ileocecal valve was competent for food entering the colon from the ileum.

With regard to the large intestine Dr Cannon found that the usual movement of the transverse and ascending colon was an antiperistalsis. When the new food entered the large intestine a strong contraction took place along the cecum and ascending colon which pushed some food onward; this contraction was followed by antiperistaltic waves these running towards the ileum thoroughly mixed the food and again subjected it to absorbing walls without interfering with the process going on in the small intestine. As the material accumulated in the transverse colon tonic contractions appeared which carried it into the descending colon leaving the transverse and ascending portions free for the antiperistaltic waves. It was then carried out of the descending colon by peristalsis and the pressure of the abdominal muscles. The remainder of the material was then squeezed out into the emptied tract and this tract was again cleared.

This work on animals by Cannon has been confirmed by observations in man by numerous workers.

Referring now more particularly to the large intestine its motor phenomena are summarized by Ashbury [2] as being a regular peristaltic movement, a greater peristaltic movement antiperistalsis and storm like movements involving a whole section of colon.

Case [3] agrees with Cannon that the prevailing movement in the proximal colon is antiperistalsis. These antiperistaltic waves do not run continuously for a long time but periodically although a series of waves

at the rate of perhaps five a minute can be seen continuing for four or five minutes. He also states that in the distal colon the characteristic activity is onward movement. Haustral churning or segmentation—much goes in the segmentation of the small intestine occurs constantly in the distal colon serving to keep the material in this region mixed with the digestive fluids.

Rieder [7] describes large pendulum movements which consist of a considerable dislocation turning and winding of those portions of the colon having a long mesentery—all of which occur without any actual transportation of the contents of the bowel.

Holzknecht [4] first described the mass movement which is the principal propulsive movement in the colon, by which the bowel content is moved from the proximal colon into and through the distal colon. In the words of Case [3] "This is a most striking phenomenon, and when once seen, can never be forgotten. The bowel contents suddenly lose their haustral markings and are formed into an ovoid sausage shaped mass with perfectly smooth edges and rounded at the ends. This mass travels at about twice the rate of peristaltic waves in the stomach, the distance travelled varying with the circumstances. As the mass comes to rest, the haustral indentations reappear quickly, if the bowel content be semi fluid more slowly if the bowel content is of firmer consistency. It is estimated that these mass-movements occur about six times daily.

Barclay [6] confirms the observations of Holzknecht having not only seen but actually radiographed the food shadow passing through some 12 in. of large intestine in a fraction of time. He believes this proves that the haustral segmentation of the bismuth-mixed fæces in the colon is not due to seybalous formation but to a condition of tonic contraction upon the fluid fæces.

To summarize, it would appear that when food enters the large intestine it is thoroughly mixed by mild peristaltic combined with the more marked normal antiperistaltic movements in the proximal colon that periodically portions are passed on into the distal colon by the mass-movement of Holzknecht then it is further mixed by the haustral churning, and by the pendulum movements of Rieder till finally passed on into the rectum by further mass movements.

To turn now to the pathological aspect of antiperistalsis in the colon. It occurs in the colon in constipation of the dyskinetic variety (Schwarz) in which there is excessive motility, and antiperistalsis to a marked degree. In these cases the marked spasticity of the bowel causes the intestinal content to be seen in small isolated masses.

It also occurs in the distal colon following the restraint by powerful voluntary contraction of the sphincter ani of an urgent call to defæcate. This is analogous to the action of a temporary obstruction.

Obstruction of the gut whether due to kinks, stenosis from bands adhesions, tubercular disease or malignant disease, causes antiperistalsis

[illegible] marked [illegible] the case presents typical [illegible] colon may be [illegible] dilated interlaced [illegible] at the flexures and haustral lines. The [illegible] fluid, easily [illegible] by its horizontal [illegible] standing. At [illegible] this fluid level is seen the [illegible] Accumulations of fluid can be seen in different [illegible] (vide figs. 10 to 11).

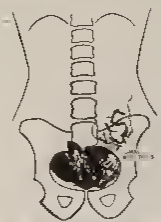
Antiperistalsis alternating with normal [illegible] colon proximal to the lesion associated with [illegible] the contents. The colon can be seen surging [illegible] vain efforts of normal peristalsis failing [illegible] the obstruction [illegible] being followed by antiperistaltic waves.

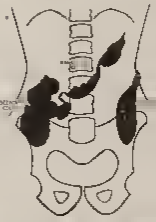
The following case serves to illustrate some of the [illegible] points:—

[illegible] was admitted to a dock head in an armed [illegible] Naval Hospital Chatham on August 15, 1917 with [illegible] three months' duration. On admission the patient [illegible] inch weight lately. He suffered from anorexia [illegible] both thighs especially the right. [illegible] pressure in the epigastrium above the pubis [illegible] noted that the posterior cervical and the axillary [illegible] movable. Melæna was occasionally present. On [illegible] opaque meal was given and the X ray examination began.

The stomach revealed no abnormality [illegible] degree of dead stasis was noted there being some [illegible] valve. By the forty eighth hour the barium had [illegible] by the evening of the third day the descending colon was [illegible] was no progression beyond the sigmoid up to the [illegible] that evening a purgative was given and [illegible] had been a massive antiperistaltic movement [illegible] had passed backwards and filled the colon. [illegible] no onward mass-movement occurred but there was [illegible] the fluid contents of the colon as peristalsis [illegible] alternately. On September 8 an exploratory [illegible] Chambers, R.N. The abdomen was opened the right [illegible] growth was found in the sigmoid colon. This was [illegible] to the primary growth. Growths were also present in the transverse colon, the hepatic and splenic flexures and also in the ileocæcal [illegible]. Nuclei in small cauliflower excrescences were found in transverse and descending colon. There were also deposits in the mesentery and around the [illegible] of the stomach and the pylorus. The disease being so extensive and widespread removal was out of the question. The patient died forty eight hours [illegible] toxæmia and exhaustion.

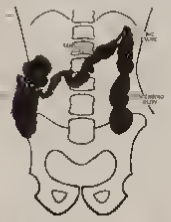
Remarks.—The findings at the operation agreed with the [illegible] tion. The dead stasis noted was explained by the growth in the region of the ileocæcal valve (fig. 8). The deposits in the transverse colon [illegible] for the constrictions seen in all radiographically (fig. 1) which the primary growth in the sigmoid colon was the cause of the gross obstruction [illegible]





[illegible] gets [illegible] in the flatus of the [illegible] After this only a little flatus is passed [illegible] with difficulty—also [illegible] a small amount [illegible] through the stricture into the [illegible]

[illegible] point to note is the relatively massive movement (Figs. 7, 8), whereby the descending colon was practically emptied and the caecum and ascending colon were filled. It would seem that at this period and also later the antiperistaltic waves were far more powerful than the



[illegible] — Descending colon filled [illegible] advance beyond the lower [illegible] 18½ hours after meal

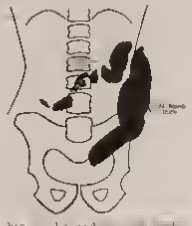


FIG. [illegible] — Second [illegible] and last [illegible] meal

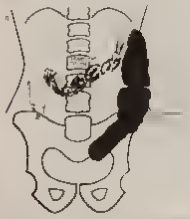
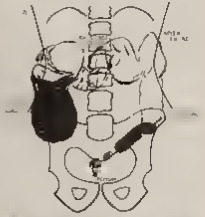


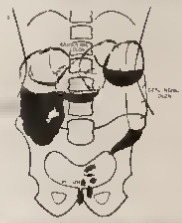
FIG. 7. — No further [illegible] 18 hours after meal



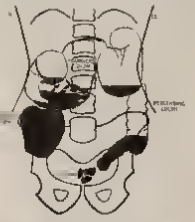
[illegible]

peristaltic [illegible] that [illegible] the musculature of the [illegible] though one saw [illegible] and [illegible] of the contents [illegible] action was comparatively [illegible] at the same time the bulk of the contents remained in the [illegible] colon

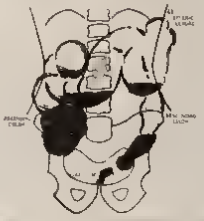
Another [illegible] in this case no fæces passed back into the ileum [illegible] becomes greatly distended the ileocæcal valve is stretched [illegible] incompetent thus allowing the regurgitation



[illegible]



[illegible] 10 — Slight [illegible] colon not quite so full [illegible] 140 [illegible]



[illegible]

[illegible] of the colon into the ileum [illegible] In this case the growth [illegible] of the ileocæcal valve [illegible] stretched [illegible] the valve [illegible] incompetent

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THE ANÆSTHESIA FOR OPERATIONS IN THE INGUINAL REGION

By [illegible] W. [illegible]
[illegible]

[illegible] the earlier [illegible] of the [illegible] to those who have appreciated the possibilities of [illegible] in my previous article I advocated the use of a 2 per cent [illegible] in sterile water but experience has shown that [illegible] results may be obtained by using a much weaker [illegible] Surgeon L. Horsley's suggestion I now employ a 0 [illegible] novocain to which adrenalin chloride 1 in 1,000 is added [illegible] of three drops to the fluid ounce

It is the technique for the infiltration of the patient with [illegible] novocain and adrenalin chloride for the radical cure of inguinal [illegible] to describe in detail, as the same infiltration with very slight [illegible] will also serve for the operation for varicocele underneath [illegible] the radical cure of hydrocele

As a preliminary to the infiltration I find it a great assistance [illegible] essential to give the patient a hypodermic injection of [illegible] and scopolamine $\frac{1}{200}$ gr., supplied by the Hoffmann-La Roche [illegible] in ampoules of 1 c.c. of this dose. For an adult 1 c.c. is given [illegible] the skin of the arm in the deltoid region from forty five to thirty minutes before the time fixed for the operation. After the patient has had his injection of omnopon and scopolamine the infiltration of the area with novocain and adrenalin is commenced. It is hardly necessary to point out that this must be performed as aseptically as the operation itself. The skin is first painted with 'green spray' or iodine and sterilized towels placed over the patient and should the anæsthetist's hands have recently come in contact with an infected wound it is advisable that sterile rubber gloves be worn.

The first injection is made through the skin at a point 1½ in. to 2 in. internal and a little above the anterior superior spine of the ilium and the needle is directed outwards to this bony point and some 20 c.c. of the solution injected deeply under the aponeurosis of the external oblique down between the internal oblique and transversalis till the needle touches the ilium. The object of this infiltration is to block the hypogastric branch of the ilio-hypogastric and the ilio inguinal nerves which are lying between

these muscles and it is essential to [illegible] if the operation [illegible] should be done thoroughly. With a [illegible] ing the needle f[illegible] skin its direction is changed to h[illegible] Ponpart's ligament [illegible] 10 to 20 c.c. injected widely under the [illegible] the external [illegible] through which the needle can distend [illegible] pass and [illegible] subcutaneous [illegible] reached through [illegible] thoroughly and [illegible] infiltrated. The needle is now withdrawn [illegible] passed through the new analgesic skin over the internal abdominal [illegible] and 20 c.c. injected under the aponeurosis through the internal oblique [illegible] is the outer third of the inguinal canal and into the cord [illegible] infiltrating these tissues thoroughly and blocking the genital branch of the genito-crural nerve the [illegible] cutaneous area again being the last to be [illegible] this enables the [illegible] infiltration to be more easily [illegible] injection over the lower part of the inguinal canal will [illegible] and the cord is injected as it crosses the [illegible] and the tissues infiltrated [illegible] the pubic bone the subcutaneous [illegible] being the last to be anæsthetized.

The skin sensation should be tested with the [illegible] to make sure no [illegible] has escaped and if necessary [illegible] injected to [illegible] the analgesia.

For an average-sized patient about [illegible] 80 [illegible] of the solution will be required but in fat subjects at least 100 c.c. will be necessary. It is always better to use a large quantity and ensure complete analgesia no danger need be feared from the amount as it is [illegible]. With a little practice the whole infiltration can be carried out in from two to three minutes. During the infiltration it is advisable to explain shortly to the patient what [illegible] to do and tell him that at the operation he will feel some [illegible] but at the worst may feel a dragging sensation but that [illegible] he will be free from actual pain.

The patient is now left lying quietly behind a screen in the anæsthetic [illegible] and tell to go to sleep and usually by the time of the operation [illegible] thirty minutes later is comfortably drowsy. The reaction to the [illegible] anæsthesia however varies in different patients—some are [illegible] deeply asleep and do not move or say anything during the whole time of the [illegible] while others appear to be little affected by the drugs. In the latter case it is better not to talk to the patient but keep his eyes shaded [illegible] the light and encourage him to go on sleeping. In the latter it is [illegible] great help to attract his attention away from the operation and [illegible] him to talk of something in which he is interested such as his own experiences during the war. In the majority of cases there are no complaints from the patient at all but a few say that they can feel a dragging sensation often referred to the pit of the stomach when the sac is being [illegible] and drawn down prior to transfixion and ligation all discomfort immediately disappearing on releasing the tension on the sac.

Omentum if present and adherent, can be freed or removed if necessary.

without [illegible] pain. On one occasion in which the [illegible] was [illegible] and was [illegible] imminent it struck me for the sake of [illegible] information that he had a desire to micturate, which quickly established the identity of the organ. Should there be difficulty in finding the sac, the patient is able to give a cough which will enable the [illegible] he is dealing with a small indirect [illegible] the presence of adrenalin in the solution tends to blanch the sac and [illegible] the task of its identification more easy. Owing to the constricting effects of the adrenalin there will be little hæmorrhage but all apparently trivial bleeding points must be dealt with, otherwise there may be a tendency for the formation of hæmatoma later on. At the operation the surgeon will find that the tissues look slightly œdematous and superficial structures appear rather deeper than normal.

Bassini's operation or some modification of it can easily be performed in this manner on either direct or indirect hernias. Operations on double hernias, a hernia on one side and a varicocele on the other, can all be most satisfactorily performed under novocain and adrenalin infiltration. For the operation for varicocele by the inguinal incision an infiltration similar to that for a hernia is all that is necessary. The radical cure of hydrocele by the inguinal operation can be carried out most successfully by infiltrating as for a hernia, carrying the injection a little lower to the top of the scrotum and paying special attention to the injection of the cord as it crosses the pubis. No pain will be caused by the removal of the tunica vaginalis or handling the testis.

When one considers that a large number of the Naval ratings who suffer from hernias or hydroceles are elderly and bronchitic subjects for whom a general anæsthetic, however satisfactory at the time of operation, is apt to be followed by serious chest troubles afterwards, the importance of this form of analgesia is obvious. The patients themselves, especially those who have had general anæsthetics, are most emphatic in their preference for novocain. Apart from the saving of time novocain forms the ideal anæsthetic for those who have to work single-handed, as once the infiltration is performed no anxiety need be felt for the patient's safety and the whole attention of the surgeon can be given to the operation.

Of some 600 cases of operations, including over seventy empyemata, performed at Haslar Hospital under novocain, not one has shown the slightest signs of toxæmia or suffered any harmful results from its use. In local infiltration with 0·5 per cent. novocain and adrenalin there is absolute safety to the patient and no after effects whatever, a claim that cannot be made for any other form of anæsthesia, whether general or spinal.

MEDICAL ACCOUNT OF ACTION IN THE ADRIATIC MAY 15, 1915

[illegible] ALEX B MUSHET, R.N.

[illegible] May 15, 1915, about 3.30 a.m. the Dreadnought proceeded to [illegible] and at about three Austrian [illegible] drawn to [illegible] in drifter lines. Both medical stations were [illegible] prepared in their respective first and [illegible] The [illegible] finally in the fore medical station, as every [illegible] sick bay forward was placed in charge. About [illegible] we got in touch with the enemy and the first casualty occurred. A man on the after range-finding platform being struck in the neck by a fragment of a high explosive shell which burst on the quarter deck. He was brought down to sick bay and although there was considerable hemorrhage his condition was not so serious as at first supposed. There was a clean deep cut about two inches long across the front above the thyroid cartilage. Considerable bleeding from small vessels which ceased after cleaning out the wound with iodine and tightly packing with gauze. The same shell caused a small fire on the mess deck right the sick bay. I visited the forward medical station periodically and had just left on one occasion when a shell burst on the hatchway leading to the station killing three men on its way and wounding six others. The wounded were carried to the sick bay and we had a busy time dressing the wounds. Pieces of high-explosive shell, being very ragged, have sharp cutting edges and even a small piece has great weight, so that it will make a large gaping wound.

The cases that we dressed were as follows:—

A stoker, R.N.R., had a piece of shrapnel projecting into the popliteal space, the shrapnel having penetrated from the outer border of the head of the left tibia. This I endeavoured to extract but it was impossible to do so owing to the pain caused. There was considerable bleeding and it appeared as though some large vessel was injured. After cleaning out the wound with iodine I packed both entrance and exit wound around the projecting piece of shrapnel putting on large pads of cotton wool and tow and bandaging the knee in the flexed position.

A stoker, R.N.R., had a very severe compound comminuted fracture, dislocation of the right tibia and fibula and ankle joint. The outer side of the ankle was shot away and the vessels around the outer malleolus torn through. At the time it appeared necessary to amputate, but the others had to be attended to and, after stopping all the bleeding, I cleaned the wound with iodine and packed it with gauze, cotton wool and tow, putting on short splints and bandaging tightly. Much pained unavailable later when he had to be hauled up through the skylight of the sick bay when abandoning ship.

A.B. [illegible] when brought to the sick bay appeared to be in a very bad way but on dressing him the wounds though extensive were only superficial. He had a long superficial wound along the left side of the ribs and abdomen another just below the left clavicle and another over the left shoulder and scapula and his face was burnt and bruised. There was considerable pain whilst dressing the

[illegible] He was also suffering from shock, so he was [illegible] between [illegible].

The [illegible] case attended to was a man who had a [illegible] wound [illegible] three inches long over the left side of abdomen.

[illegible] stoker was treated who had a deep wound [illegible] which luckily had not penetrated the thorax [illegible] of the sternum away and was bleeding profusely. [illegible] with [illegible] and packed tightly.

The next case was that of a chief stoker who was partially [illegible] the bursting shell and had a small burn on the left wrist. His [illegible] first very distressing, nothing allaying the cough and cyanosis, so I [illegible] a ventilation shaft from the upper deck, and he revived later not [illegible] for his adventure.

These were luckily the only casualties when we withdrew [illegible] ing the three cruisers. After withdrawing the forward station [illegible] packed up, and attention was given to the wounded. [illegible] given morphia by Wilde's syringe and the sealed morphia [illegible] was of great value during the action. If, however, the barrel of the syringe had been made of glass one could have judged the dose and seen the quantity of morphia left in the syringe, as all the work was done in a badly lighted sick bay. It demonstrates the importance of the hand lanterns and electric torches which we had provided. The sick bay in these ships has four cots, but extra accommodation had been provided outside the sick bay for emergencies, which proved of great use.

When consulting in the ward-room on our way to the base concerning the landing of the wounded and as to whether it was advisable to serve rum at dinner time or to wait till in harbour in the evening (the latter was considered the better plan, as proved later when the ship was torpedoed, as a good many men would have been on the mess deck which was obliterated instead of being on the upper deck which they were, thus saving many lives), the ship was struck by a torpedo about 12.[illegible] p.m. just beneath the wardroom where the Commander and I were sitting at the table. The force of the explosion was terrific, the wardroom deck being buckled in places and the rivets started. On going aft I found that [illegible] berth stewards Reynolds and Jones had already managed to get the wounded out of the sick bay through the narrow skylight, all the watertight doors and the escape hatches being closed. Reynolds got all the sick into the steam cutter which was stationed near the sick bay before being lowered, so that the sick suffered very little from their experiences and behaved excellently. It was then only a matter of getting them from the stern of the ship which was drifting on to us, we having no steam up. Finally we were transferred to an Italian destroyer. I represented that I had six wounded on board and asked that arrangements might be made for landing them. The sick were landed at 11.30 p.m., being transferred from the destroyer to an Italian motor barge and finally to the Italian hospital. By this time a severely wounded man was in a very collapsed condition, but after we had injected large quantities of saline into the axilla [illegible]

[illegible] red and [illegible] that night [illegible] the Italian [illegible] very rapid [illegible] proceed to [illegible]

The immediate [illegible] but the whole forward medical staff [illegible] completely obliterated. Also had men been [illegible] would have been lost. Three men were killed in the action [illegible] was torpedoed. During salvage work the bodies of the [illegible] men were recovered from compartments after pumping [illegible] The Commander who was with me in the wardroom when the ship was torpedoed and evidently had gone below whilst I went aft to the [illegible] seen again till his body was recovered some five days [illegible] He had evidently gone to see the extent of the damage but [illegible] by the rising water and, all being in darkness, had fallen through a hole in the deck and was carried aft under the armoured deck where his body was found. Three men had been killed outright by the explosion and one evidently was drowned in a compartment. The bodies as they were recovered were identified certified and placed in sealed coffins and buried at the cemetery ashore. Several days elapsed before they were all recovered the work always proceeding.

Only two men were left in the hospital and it was requested that they should proceed to the English Naval hospital elsewhere as soon as the Italian authorities deemed it advisable to move them. It was with the greatest regret that we had to leave them behind. The Italian authorities gave permission for the food rations to be augmented by jam and tinned meat &c., from the ship which was much appreciated by the men who behaved excellently throughout.

THE WASSERMANN REACTION IN SYPHILIS
OBSERVATIONS [illegible]

By [illegible]
[illegible]

[illegible] patients [illegible] hospitals and hospital ships which it would [illegible] the medical officer and to the benefit [illegible] possible known with [illegible] the plasmin [illegible] be supplied [illegible] be collected and [illegible] Laubert and the ships [illegible] received until ten or twelve [illegible] the meantime the patient [illegible] and the result of the [illegible] officer whilst the [illegible] received no syphilitic [illegible] has obscure symptoms [illegible]

The true Wassermann [illegible] the difficulty of breaking [illegible] stumbling block [illegible] corpuscles [illegible] not always coming with [illegible]

Hence having [illegible] modifications of the Wassermann [illegible] Stern's test can be [illegible] the patient's serum but [illegible] a serum which is [illegible] control so that the [illegible] the test fully [illegible] test has also been [illegible] human blood cells [illegible] complement being supplied by the patient [illegible] obtained were quite sufficient but [illegible] anti-human serum became exhausted. [illegible] the disadvantage of Stern's test [illegible] from the tissue serum. Hecht's test which [illegible] relying on both complement and hæmolysis [illegible] has the further disadvantage that [illegible] no hæmolytic ambiceptor in ships sera. [illegible] tests apart from the difficulty in [illegible] reagents is the percentage [illegible] which [illegible] original Wassermann reaction which [illegible]

[illegible]

[illegible] in consideration [illegible] a fair trial [illegible] Isen and Iwell [illegible] high percentage of positive [illegible] positive reaction to a negative [illegible] stage of syndrome [illegible]

[illegible] from a hundred [illegible] but this was [illegible] from [illegible] and stage of syphilis [illegible] previous [illegible] is strongly positive

[illegible] serum was [illegible] morning [illegible] presence of [illegible] Two of [illegible] the syphilitic patients [illegible] of the [illegible] rather demarcating [illegible] the fact that [illegible] that all control [illegible] and the [illegible] only have and [illegible] received [illegible] syphilitic treatment [illegible] two years [illegible] of blood were collected [illegible] and despatched to Plymouth [illegible] reports on all three sera were strongly positive. These further [illegible] indicated that the test was fairly efficient, for no sera had returned a positive reaction to a negative to Wassermann bleed although it must be admitted that there may have been cases other than these three which were positive to the Wassermann test.

Further Hermann Perutz tests have been performed on over 700 sera in the [illegible] present the third to H.M. Hospital Ship Soudan with obscure symptoms indicating an all syphilitic lesion sera have been tested and never has a positive reaction to the Hermann Perutz test been obtained which was not confirmed by a report Wassermann reaction positive. At the same time it must be admitted that a few patients admitted for intravenous injections of galyl or novarsenobillen with a report on the syphilis sheet of [illegible] positive or positive+ have not shown the Hermann Perutz reaction However these cases are few in number certainly not 1 in 10 per cent reacting negative to a positive Wassermann.

Slightly [illegible] cases have been encountered where a Wassermann report has been given within the last month the vast majority of these having been admitted for galyl or N.A.B. injections following a positive Wassermann reaction the minority have been with a few exceptions cases returned as negative Wassermann following a blood test forwarded because of obscure symptoms These latter had been already tested and found to be negative to the Hermann Perutz reaction In collecting these cases attention was paid to the time which had elapsed since the positive Wassermann was reported—any time over a month not being counted—and also the treatment mercury or arsenical compounds which had followed

this W[illegible] and
[illegible] not [illegible] months [illegible] Autumn [illegible]
[illegible] hospital [illegible]
then [illegible] returned [illegible]
[illegible] pitting [illegible]
[illegible]

[illegible] the Hermann [illegible]
[illegible] One of these [illegible]
[illegible] a fine case of secondary syphilis [illegible]
[illegible] was injected for intravenous injection [illegible]
[illegible] rash all over the body [illegible]
(no [illegible]) and small generalized adenitis. Accordingly [illegible]
[illegible] years previously and received the [illegible]
[illegible] symptoms. A Wassermann [illegible]
performed [illegible] and May, 1918, with a negative result [illegible]
[illegible] (Hg. 21) blood test was [illegible]
and [illegible] the Hermann Peritz test. [illegible]
this was followed by a specimen of serum was forwarded south [illegible] Wassermann
test. The [illegible] 0.4 gm injection of N A B [illegible]
on July 2 and later further examinations showed [illegible] Hermann
Peritz reactions. On July 6 a second specimen of serum was [illegible] south. The Wassermann report on both specimens [illegible]
negative on each occasion. The unanimous opinion [illegible]
on board was that the case was one of secondary syphilis [illegible]
did not clear up getting neither better nor worse after the [illegible]
of N A B (0.4 gm doses). This but taken with two [illegible] Wassermann and three negative Hermann Peritz tests in a period of [illegible]
throws some doubt as to the specific diagnosis of this case. O[illegible] two cases which had definite secondary symptoms and [illegible]
negative Hermann-Peritz reaction one result was not [illegible] Wassermann test, the report [illegible] broken in transit. [illegible]
it would have been decidedly interesting to know if a positive [illegible]
would have been returned. The other case was a [illegible]
infection on June 1, 1918, who developed a typical papular [illegible]
with ulcerated throat and enlarged occipital and epitrochlear glands. He
was admitted on July 11 and the same day a blood examination was [illegible]
with a negative result. A further examination the following [illegible]
doubtful reaction and then a specimen of serum was sent south. On
July 16 a further Hermann Peritz test was performed and this time an
undoubted positive result was obtained. This was confirmed by the

[illegible] July [illegible] positive [illegible] positive [illegible] negative [illegible] Perutz [illegible] secondary syphilis [illegible]

[illegible] cases of secondary syphilis who [illegible] less than [illegible] positive reactions to the Wassermann [illegible] similar [illegible] the Wassermann and Stern test although [illegible] relapses and marks [illegible] rarity of these patients that they [illegible] expected

[illegible] Perutz tests were kept and it was not [illegible] which could not be confirmed by Wassermann [illegible] over 500 sera have been tested only [illegible] and all the reports of the Wassermann tests [illegible] before the tests were performed on ten days [illegible] was received

Physical Phenomena of the Reaction—The reaction depends on [illegible] insoluble albumens present in the [illegible] by means of breaking products [illegible] their own [illegible] albumens particles are insoluble by [illegible] and the breakup products [illegible] consists of solubility by [illegible] these particles with [illegible] water molecules This keeps [illegible] at a definite [illegible] that the [illegible] particles are [illegible] An increase in the breakup products will make the albumen particles [illegible] stable and [illegible] keep [illegible] Conversely [illegible] may decrease in the breakup products will cause a diminution in solubility and an increase in the [illegible] between their surfaces [illegible] even destroying the [illegible] of the albuminous particles

Syphilitic serum is deficient in breakup products and hence the albumen particles are less stable

If [illegible] glycocholate is added to the serum, a calcium glycocholate salt is [illegible] which absorbs the albumen particles and if these are very [illegible] with a macroscopic precipitate will result On the addition of cholesterin the whole will first act as a solvent but in the precipitation process with the absorption of the albuminous particles it will add to the mass of precipitate producing a macroscopic deposit

The Hermann Perutz reaction, as also the precipitation tests of Porges and Elias &c., is based on the presence of highly unstable albumens

Herzfeld and Klinger state that "it is not a question of new bodies

[illegible]

[illegible]

(1) A non specific blood

(2) A definite positive to Wassermann [illegible]

The sera are then inactivated [illegible]

This is done by placing the [illegible] (with its temperature being maintained from half an [illegible] minutes) The water bath used on board consists of [illegible] resembling a large sardine tin with circular holes punched [illegible] the margin of each orifice being stamped with a number [illegible] by one of the engineer staff on board and has been [illegible] use Water is heated to 55° C poured into the [illegible] thermometer is inserted and the requisite temperature [illegible] by means of a small spirit lamp

Whilst inactivation of the serum [illegible] the two solutions necessary for the test can be prepared [illegible] ensuring that the temperature in the water bath remains stationary [illegible] C (one batch of sera was entirely spoilt by inadvertently allowing the temperature of the water bath to rise to 65° C)

These two solutions consist of (1) A freshly prepared 2 per cent solution of glycocholate of soda in distilled water (2) A freshly prepared 5 per cent solution in distilled water of a mixture of sodium glycocholate cholesterin and 95 per cent alcohol

The latter mixture is made up as follows —

Glycocholate of soda	2 grammes
Cholesterin	4
Alcohol 95 per cent	100 c c.

This keeps indefinitely if put in a cool place

Equal parts of (1) and (2) are shaken together and this mixture is placed on one side until the sera having been inactivated and the water poured out from the water bath, 0 5 c c of it is added to the 0 5 c c of serum in each agglutination tube Each small tube is then shaken and water at a temperature of 22° C is poured into the modified water bath through one of the vacant orifices and the whole placed for twelve to eighteen hours at a specified distance from a small electric radiator This keeps the water at a temperature of from 21 C to 23° C all through the night and the distance was gauged after a few experiments no incubator regulating this temperature being on board

After twelve to eighteen hours incubation, the water bath is emptied and the results can be read off a white flocculent precipitate indicating a positive reaction whilst in a negative result the solution is quite clear This precipitate begins to form after eight to ten hours, but is best seen after fourteen hours and it has been found to be more definite if the sera are allowed to stand at room temperature for a further two or three hours before being examined

A strong positive reaction (+++) is readily recognized by a white deposit at the cone shaped bottom of the tube extending up the sides,

[illegible] positive [illegible] to the [illegible] Wassermann [illegible] all through the [illegible] test serum [illegible] with a good light over a black background. This can be [illegible] compared with the clear solution obtained [illegible] control. A positive reaction (+) varies between the strong [illegible] positives showing a small deposit in the bottom of the tube [illegible] up the sides and small granules all through the solution.

The [illegible] divided into —

(1) Positive to Wassermann and also positive to Hermann Perutz reaction.

(2) Negative [illegible].

(3) Those [illegible] positive to Wassermann and not being negative to the Hermann Perutz test.

(4) Chancrelle [illegible] syphilis where a typical syphilitic rash [illegible] were present. Particulars of these have already been given.

The following table shows the results obtained —

[illegible]	[illegible]	[illegible]	[illegible]
37	[illegible]	31	30
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

This is better [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
100	31	[illegible]	[illegible]

Jensen and [illegible] the [illegible] not gave a high percentage of positives to the Wassermann test and not gave no statistics indicating the number of positive Wassermann tests which failed to react positive to the Hermann Perutz reaction. He [illegible] some statistics are given by Harrison who [illegible] that fourteen gave a positive reaction [illegible] test. Thirteen of these were found to be positive [illegible] Wassermann reaction. This latter was semi-[illegible] highly [illegible]. In this case there appears to be [illegible] Wassermann reaction is compared to the Hermann Perutz test. At the same time the result contradicts Jensen and [illegible] that never has a positive reaction been obtained [illegible] Wassermann serum. Of the remaining 81 found by Harrison [illegible] the Hermann Perutz test 10 were positive [illegible] negative making an error of 10 in 81 [illegible]. This is a higher percentage than has been recorded by the [illegible] where the error is shown to be 7·5 and the [illegible] which gave a negative

reaction to a positive to Wassermann [illegible] returned as a [illegible] positive W[illegible]

Certainly I found it quick [illegible] a hospital ship, and that it [illegible] the following illustrations:

[illegible] R.M.I. [illegible] admitted [illegible] of the [illegible] performed on [illegible] pallida [illegible] day he [illegible] to H.M.H.S. [illegible] Indian [illegible] fourth [illegible] typical.

The difficulty in this case [illegible] after sea [illegible] Perutz test was performed a copious flocculation [illegible] a specimen of serum was sent for Wassermann [illegible]. An intravenous injection was given May 12 and this was repeated May 19 and May 26. The report on the serum was received on May [illegible] strongly positive. Hence in this case the patient had received three intravenous injections before the report on his serum was received.

A.L. admitted with suspicious nervous symptoms [illegible] any history of syphilis. Serum examination gave a positive reaction to Hermann Perutz on February 19 and again on February 23. The result of a Wassermann despatched on February 18 was received on March 1: "Wassermann strongly positive." During the interval this patient had received anti-syphilitic treatment.

Officer's steward denied any history of a sore on the penis but admitted the [illegible] of infection three months previously. He stated he had noticed a [illegible] spots on his chest extending along his neck and on to his forehead a week [illegible] previously, but he definitely maintained that he had not suffered from a [illegible] throat at the time. Examination of his blood on March 13 showed a strong [illegible] Hermann Perutz reaction and the report of his serum sent south on the [illegible] was "positive Wassermann (++)" on March 25.

S.H. [illegible] contracted syphilis in 1911 and received two and half years galyl and [illegible] treatment. He was then informed that he was cured, having received [illegible] injections of galyl and sixteen mercury injections. A positive Hermann Perutz test in January 1918 was confirmed by a positive Wassermann reaction. Three more galyl and eight mercury injections were given and his blood again tested on March 23 with a negative result to Hermann Perutz. On forwarding a specimen of serum to Devonport a negative Wassermann report was obtained from this hospital.

Officer's steward, developed a sore on the penis in which *S. pallida* were found in August 1916. An irregular course of mercury was instituted for twelve months and then after a positive Wassermann reaction he received three galyl and twelve mercury injections. A blood test sent to Devonport on January 1 1918 was returned as negative and a Hermann Perutz performed on January 12 showed also a negative reaction. All treatment was then stopped and on March 12 serum was collected for both tests. The Hermann Perutz test showed a positive (++) and the result was known on March 14, whilst the report "Wassermann positive (++)" on the serum sent south on the same day was only received on March 25. This patient during the interval received two intravenous and one mercury injection.

[illegible] ship to the [illegible] south [illegible] report [illegible] on board [illegible] could have received [illegible] known.

Only [illegible] and marked ulceration [illegible] on blood examination [illegible] Pentz reaction. Some [illegible] the result very [illegible] positive [illegible] since N A B injection (0·45 gm.) [illegible] reliably improved and the [illegible]

[illegible]

(1) The result of the investigation [illegible] Hesse and Guillebeau statement that the Hermann [illegible] positive with a negative to Wassermann serum [illegible] in no such case was recorded.

(2) The test can be performed with the [illegible] on board ship. The apparatus can be [illegible] and is completely with one dozen agglutinating [illegible]

(3) It requires but three drops of blood [illegible] and alcohol [illegible] per cent. of olive oil [illegible] cholesterine and [illegible] per cent. alcohol [illegible] than 500 tests.)

(4) The result of the test [illegible] in contrast to this the time elapsing [illegible] the pigments serum to the receipt of the [illegible] Wassermann test is frequently from ten to twelve days [illegible] days is then [illegible]

(5) It is acknowledged that early [illegible] gives the greatest chance of successful treatment.

(6) It follows that this test would be of the [illegible] on board ship and that when a positive result is obtained [illegible] should be immediately commenced without waiting for the [illegible] the Wassermann test.

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PSYCHOLOGY AND THE PREVENTION OF VENEREAL DISEASES

[illegible] SIR WILLIAM [illegible]

[illegible] special of venereal [illegible] matter causing [illegible] Army or Navy is not [illegible] large number [illegible] the revised have been [illegible] statistics of [illegible] are not available [illegible] A certain proportion [illegible] have become [illegible] great number would not [illegible] at late. The [illegible] for it lies in the conflict [illegible] so many minds [illegible] present time.

No subject involving [illegible] and the dealing with [illegible] fully considered without a [illegible] consideration of the [illegible] of the question. To understand [illegible] means it is necessary [illegible] to examine of the mind [illegible] especially in regard to how [illegible] affects their minds and thoughts.

It does not serve much purpose to make a sweeping statement that sex is a man's elemental instinct to have sex connection [illegible] endeavour will prevent him gratifying it when and where he likes. This is a frequently expressed view. Nor is it sufficient to come to the conclusion that as he will gratify the instinct all one can do is to warn him against the type of woman he is to avoid, and to place, unofficially and by [illegible] means of counteracting as far as possible any infection he may pick up through neglect of the warning.

Whatever may be the private views of a medical man, the matter must be dealt with for the good of the race, and even should certain [illegible] propaganda seem to him personally useless and unnecessary [illegible] such that even one or two cases of venereal disease might be prevented [illegible] is his duty seriously to consider making use of them. This does not mean that he must personally use means of persuasion by argument in which he does not himself believe. To do so would in the first place be [illegible] and in the second place it would carry no conviction whatever to those who listened. The final impression would be worse than if he had [illegible] thing, it will. He can, however, provide opportunity to others who do believe in such methods to use them, provided they are not such as to [illegible] him.

The slightest knowledge of present day psychology has demonstrated unquestionably that his subconscious attitude towards any subject of argument somehow reflects in a man's speech on that subject. For a medical man who, for example, is unable to hold that sex connection before

marriage is what is termed immoral, to lecture men on the "immorality" of their conduct is not only absurd but really harmful There is an unconscious atmosphere created almost certainly in which the men feel that the lecturer is speaking with his tongue in his cheek Whether, therefore in lecturing, writing or conversing on this subject, if one is to do any good one must never make any statement which exceeds one's own conviction and knowledge To do so merely brings one into contempt With these generalities we must turn to consider more particularly where the psychology of the question might help in prevention

In the first place the sex instinct is almost the most powerful in the human animal The opinion that it is *the* most powerful has been the theory at the root of what we may call Freudism that variety of psycho therapeutics founded by Freud With him few are agreed in any great measure, but in many points his observations are undoubtedly of value These have been explained and enlarged by Professor Jones late of Toronto in his Psycho Analysis They are largely the application of facts that most psychologists already knew, to the theory that sex-feeling is at the basis of all thought and action from infancy One must be fair and state that the expression sex feeling is used by Freud with a much broader meaning than we should use it But be that as it may, one point is clearly emphasized by these and other writers that there is a subconscious mentality which is gradually built up in a man's mind through influences and incidents which may date from very early years and which may have become utterly obscured and entirely forgotten They may have even been scarcely noticed at the time by the recipient yet they may be important links in the creation of his subconscious thought world These are facts that have been frequently and amply proved by psycho-analysis hypnotism, and in other ways

Such facts may assist us in our consideration of why men who otherwise would have abstained from sex connection before marriage have failed to do so in the Services The segregation of men by themselves away from women friends and relations is a powerful factor The sex instinct is not merely the desire for connection It is a far wider thing than that It covers the desire for the society of women for friends of the other sex This is evident to any one who censors letters Such companionship whether in correspondence or otherwise goes a long way towards the legitimate gratification of the instinct Here lies the primary danger There is the difficulty of writing which prevents many men from taking advantage of correspondence to any great extent Further, when a man is away from his home district companionships with any but a dangerous type of woman are difficult to find Everyone knows that in the great majority of cases where venereal disease is contracted the man had in original intention of having connection when they went ashore In most cases there is merely the legitimate desire for woman companionship and the further action results through the companionship being bad or through loss of control frequently due to alcohol

Another [illegible] The [illegible] results in [illegible] the [illegible] legitimate gratification being [illegible] The [illegible] consumption of the power of thought [illegible] any one [illegible] political or other mass movement [illegible] most [illegible] certain subject will know the [illegible] of that [illegible] in the crowd So when there is an [illegible] individual is exposed to it he [illegible] vitally [illegible] by it and is swayed [illegible] some [illegible] builds a subconscious mental world that later [illegible] thoughts thought along the same lines easier, thus [illegible] and thought that lessens his power of self-control

Amongst the prevalent ills to which he is constantly subject is the idea that [illegible] say to health The continual registering in his mind of [illegible] indicates this idea influences him towards [illegible] The [illegible] prominently less prevalent is that a dose [illegible] such things [illegible] the [illegible] being that the men have no opportunity of following [illegible] ills in history of those of their acquaintance [illegible] they have not [illegible] these are some of the [illegible] that [illegible] everyone can think of others

[illegible] counteracted? Here is an instinct that [illegible] gratification leads to serious results, among which, from [illegible] point of view, the important loss for a period of men who [illegible] is faced with various methods One [illegible] the value of any and every form of exercise and relaxation [illegible] extent the 'atmosphere' referred to [illegible] things is generally acknowledged Are there [illegible] methods [illegible] value? I would venture to suggest that there are much other methods

The first one might be termed Compulsion It would mean the [illegible] of all leave short or long It would be a serious infringement [illegible] of the subject One only raises it to emphasize the impossibility [illegible] except in one particular As applied to alcohol a modified use [illegible] might be of value The limitation of the consumption of alcohol [illegible] unquestionably remove a potent factor in the contraction of venereal [illegible] Simple inquiry when seeing fresh cases will show that A certain [illegible] has already been done by beer tickets for canteens, but as long as [illegible] can get it elsewhere little can be achieved The futility of regu[illegible] regarding the supplying of Service men is perfectly obvious One is [illegible] aware of the objections, for it thus becomes a matter affecting the [illegible] population On the other hand if the whole country were rationed, [illegible] have a great effect, for it is a different matter giving a man the [illegible] that is to morrow's ration for oneself from giving him a drink for [illegible] he merely pays!

[illegible] really [illegible] psychological laws [illegible] to control it is to substitute [illegible] so that in its new form [illegible] instinct does find some [illegible] given there Letters [illegible] his ideals of women and [illegible] a man is to write unless [illegible] point of view

Again if it were only possible [illegible] long leave with free tickets rather than [illegible] men have no relatives where, it would [illegible] with their home friends and relatives [illegible] is acknowledged that in some cases this would [illegible] tunity to a certain class yet taken all in all [illegible] than the present system [illegible] ratings In these ways the sex instinct [illegible]

Take lastly the substitution of superior [illegible] another In illustration of this there [illegible] practically a dipsomaniac as far as [illegible] came to hate another He deteriorated [illegible] and while planning, the latter desire [illegible] he had no desire whatever for alcohol in [illegible] place Then the former desire returned in full [illegible] to this sex instinct? I believe it can and [illegible] to supplant only the desire for intercourse is [illegible] such as love anger fear, are equally powerful [illegible] emotions which are to be found in almost all [illegible] their childhood's environment and the subconscious [illegible] playing upon their developing minds for many years [illegible] founded desire to play the game

There is further the influence of religious desire We [illegible] omitting any possible factor We might add also reason, but it [illegible] known fact that reason alone will control but few men As an aid [illegible] other factors it is excellent for if a man is moved by some strong [illegible] a certain action or restraint in many cases it is a realization of the [illegible] sense and reasonableness of his action that keeps him to his decision

How, then, can we make use of these powerful aids in dealing with this problem? Anger we cannot use very easily but into many a man's life it has entered to restrain Men who have seen a very great friend especially one of the other sex, go wrong through the act of another are filled with a deadly anger against the loose theories on the subject The religious factor is regarded by most as the 'padre's job Here is where the padres might contribute to the solving of this problem Whatever a man's personal beliefs he cannot deny that religion acts as the only power of restraint in

[illegible] men's lives [illegible] they the same [illegible] who [illegible]

[illegible] each the [illegible] again [illegible] lines personal conversation is [illegible] impossible [illegible] remain [illegible] and printed matter As far as [illegible] knows there [illegible] no steps taken to meet the need by literature[1] Such would have to be [illegible] officially but in appearance &c the unofficial [illegible] would have to be written not only by medical experts but also by experts [illegible] the lay point of view in mind It should only contain the [illegible] in various [illegible] it will have no appeal The same applies in a [illegible] way to be [illegible] Even minor detail are of importance For [illegible] there is the importance of choosing a time when there will be the [illegible] that men will be called away and thus disturb the audience [illegible] importance of the speaker avoiding the least semblance of his [illegible] the matter as a thing he does not much believe in but has to do [illegible] need of his carrying his audience with him, so that they do [illegible] he thinks them a lot of potential blackguards but rather that [illegible] them and their willingness to reconsider the matter or to [illegible] it for once not as a subject for laughter Finally the speaker [illegible] the various types of men in his audience He is speaking to [illegible] well educated men, to whom reasons and facts moral and physical [illegible] appeal to weak minded men whom fear of their skins might [illegible] men, practically all of whom would appreciate as worthy of [illegible] consideration the conception of the sex relationship as only part of that [illegible] called love Most of them will be men who, deep in their minds have [illegible] for a wife and children some day while many of them will never have [illegible] married the woman of the street as somebody s daughter with a life to [illegible] as a human being and not merely as an animal There will be others too, who have never considered the country s need for fit men and their responsibility there while some will be cold blooded hating a fuss and others will be hot blooded and sentimental All must be considered with sympathy and understanding

This is but an outline of this immense question but it is a suggestion that, unless the matter is faced in a broad way with a realization of the tremendous influence of mind as well as body no adequate measures can be attained for reducing the serious spread of venereal disease in the Navy taken as a total increase rather than as a percentage increase It will be said that the medical is not concerned with morals or any such allied subjects One would venture to suggest that the medical is concerned with every side of a man s nature mental or physical and his duty is to deal with every side so far as he can for the good of his patient and the ultimate good of the race If he cannot deal with any side which yet might achieve this then let him do his part first, and let some one else step in where he feels he cannot go

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[1] A card pamphlet on the subject has lately been issued by the Admiralty copies of which can be obtained by Medical Officers on demand in the usual way —[Ed].

[illegible] IN THE TREATMENT OF DYSENTERY

[illegible] W. [illegible] SMITH [illegible] P., [illegible]

[illegible] Medical [illegible] British [illegible] prepared from whole barleyed Meal [illegible] The effect [illegible] and Meal [illegible] which [illegible] and [illegible] worded to [illegible] report

[illegible] letter [illegible] that by using [illegible] Barleyed Meal [illegible]

[illegible] Adults and children [illegible] from intermittent dysentery would [illegible] in a few days

[illegible] who had suffered [illegible] dysentery for six months would be [illegible] days

[illegible] who had suffered [illegible] dysentery for ten years would be greatly improved in two months [illegible] of time depending upon the amount of [illegible] changes

He believed that by the use of the prepared meal fermentations would be prevented that the bowel would be able to take on its normal functions, and that the lesions would be cured He also holds that the meal so prepared by [illegible] has an antiseptic action against the dysenteric organisms, and as the barleyfication has converted the starch into dextrin and the gluten of the flour into peptones it will be easily assimilated He states that this meal has been used with success for cases of infantile diarrhœa in the dispensaries in Paris

He suggested that clinical and therapeutical tests should be made with the following subjects Five cases suffering from intermittent dysentery five cases suffering from dysentery of nine months duration and five cases who had suffered from dysentery for one to ten years He stated that before a month all the patients would have solid or normal stools not exceeding one to three a day all pain would vanish but that the patients weight would not increase for some considerable time

The schedule for the treatment extending over ten days is as follows —

First Two Days —An exclusive diet of barleyed meal and water made into a gruel as much as the patient can take given four times a day, with boiled water only to drink

Third Day —The meal to be mixed with strained vegetable broth or milk

Fourth to Tenth Day —Meal to be mixed with vegetable broth or milk

The meal was of various kinds (1) made from the best American wheat flour (2) bean flour (3) barley flour, and (4) rice flour Only small

[illegible] the last three w[illegible] [illegible] out which [illegible] what their

M[illegible]e wh[illegible] enthusiast [illegible] was attempting to obtain the [illegible] and it seemed expedient to give the [illegible] therefore first had a chemical analy[illegible] which gives the following report of its [illegible]

Wheat Flour—A brown [illegible] powder [illegible] with a sweetish [illegible] [illegible] granules similar to [illegible] of irregular shaped particles

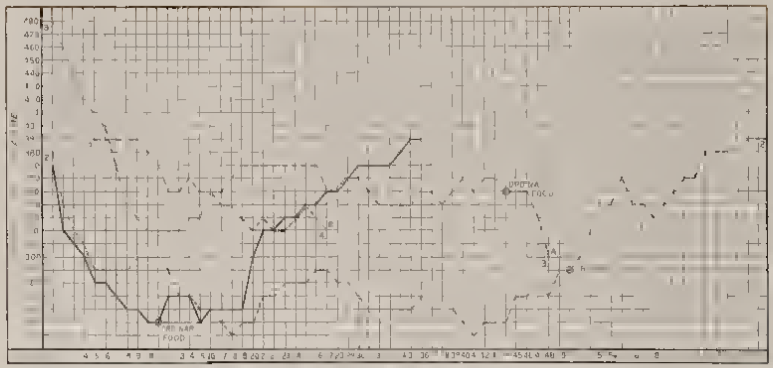
[illegible]

[illegible] with [illegible] by M[illegible] [illegible] The former appears [illegible] and the latter is [illegible] [illegible] and the amount of [illegible] large [illegible] considerations therefore it appears that the [illegible] starvation diet being deficient in [illegible] that from [illegible] preparation it must be deprived of all [illegible]

Bacteriological Tests

Two [illegible] each of the samples of torrified meal was [illegible] the method used in making [illegible] and plates of these [illegible] highly with *B. typhosus*, *B. dysenteriæ* (Sh[illegible]) and [illegible] if there was any apparent inhibitory power in the [illegible] In no case was the growth less than in the control plates

Two per cent was added to litmus peptone water and the tubes were inoculated with Friedlander's bacillus and *B. coli com.* Growth occurred in all the tubes There does not therefore appear to be any antiseptic property in the meal able to diminish the growth of ordinary intestinal organisms when tested *in vitro*



1 [illegible]
2 [illegible]
3 [illegible]

[illegible] EXPERIMENTS

A series [illegible] on a pigs was then carried out to demonstrate [illegible] results are graphically shown by weight curves at the [illegible] understood that it was extremely difficult to get the [illegible] amount of the food and it was necessary to have recourse to hand feeding and also to give some of the food in cakes of sufficient dryness

Experiment 1 —With meal and water only

(*a*) Pig 370 grm There was a steady fall in weight to 250 grm when on the tenth day the animal appeared so weak it was put back upon ordinary diet after nine days it again began rapidly to regain weight and recovered

(*b*) Pig 430 grm Rapid fall of weight and it died on the seventh day 310 grm Post mortem showed serious hemorrhages congestion of the lungs and a very watery state of the blood—pre scurvy condition

(*c*) Pig, 420 grm Rapid fall in weight to 290 grm on the twelfth day It was then put on ordinary diet, and steadily recovered

Experiment 2 —With meal and vegetable broth (celery, carrots, turnips and onions)

(*a*) Pig, 480 grm There was a rapid fall in weight to the tenth day (320 grm) then a partial recovery The animal remained very thin and on the forty fourth day the weight was 360 grm and normal food was started but it again lost weight and died on the forty eighth day convulsed Post mortem There were no definite signs of scurvy no hemorrhages and the joints were not swollen Simple inanition

(*b*) Pig, 370 grm Rapid loss of weight and on the eleventh day died from simple inanition

Experiment 3 —Meal and unboiled milk

Pig 380 grm For the first five days it lost weight rapidly, then more slowly to the eighteenth day It was very emaciated, and its coat was staring, but there were no tender joints or hemorrhages Normal feeding was then started and the animal slowly recovered and commenced again to grow

Experiment 4 —Meal and Navy lime juice

Pig 390 grm This animal maintained its weight for five days, then there was a slow fall It finally ate with difficulty moved with pain and died on the twenty seventh day early scurvy Post mortem Very emaciated, marked serious hemorrhages, but the joints were not swollen and there was no apparent degeneration of the sciatic nerves

From these experiments it was evident that the torrified meal with water, with vegetable broth containing anti scurvy vitamines with unheated milk, or with lime juice was not sufficient to nourish young guinea pigs With water and lime juice scurvy symptoms were being induced but when combined with milk or vegetable broth death was due to simple inanition and the life of the animal was considerably prolonged

Treatment of Five Consecutive Dysentery Cases according to the Schedule recommended —Recognizing that the food alone contained no anti neuritic properties it was supplemented by fresh lemon juice and oranges and the food was also made more palatable by the addition of sugar, and the meal was served in crisp cakes as well as taken in fluid form There was of course, a great monotony in the diet, but the patients co operated willingly in keeping to the dietary, and rarely suffered any nausea or diarrhœa

[illegible] A [illegible] relapsing case contracted in the Eastern Mediterranean. He [illegible] with sanatine. There was a little mucus in the stools but [illegible] and. He took the ten days' treatment well, but lost [illegible] lb. in weight. A [illegible] return was made to the normal diet. The symptoms all cleared up, and the patient was discharged to duty.

Case 2.—A [illegible] case of three years' duration contracted in the Eastern Mediterranean. The blood reacted to Flexner's bacillus. He lost 3 lb. in weight during the course, but improved rapidly and kept well.

Case 3.—A chronic case contracted in China. Sanatine treatment. The stools contained mucus, blood, and entamœba cysts. He lost 2 lb. in weight during the course, but the diarrhœa ceased and pain disappeared. He slowly recovered and was discharged, feeling better than he had done for months.

Case 4.—A chronic case of three years' duration contracted in France. During the course he lost 2½ lb. in weight, but made a good recovery.

Case 5.—A subacute case contracted in Gallipoli three years ago. The stools on admission consisted of blood and mucus only. His blood reacted to Flexner's bacillus, and there was considerable abdominal pain. He stood the course well, and the mucus and blood ceased. But the stools were still frequent. He did not lose weight, the symptoms slowly cleared up, and he gained a stone in weight before leaving. No relapse up to date. No medicinal treatment was used in any of the cases.

The results of the clinical trial were therefore favourable. The food was distinctly non-irritating, gave rise to no gaseous distension or peristalsis, and tended to induce healthy stools in a comparatively short time, but it is not possible at present to say whether the improvement in such chronic cases will be permanent. It is evident, however, that the results of the treatment were encouraging and worth further trial, when the co-operation of the patient can be obtained. It is essential that a certain amount of anti-scorbutic substances shall be given with the food, and that the patient shall be kept warm in bed.

[illegible] AL ŒDEMA OF THE FEET AND LEGS

[illegible] C DEVITTE MARSHALL, F R C S ENGLAND

ŒDEMA of the feet legs and ankles is a curious condition often seen in certain parts of the East Indies and in the Red Sea and doubtless also in many other tropical districts and because of its resemblance to the symptoms of various serious diseases it assumes a position of importance rather greater than it merits It is frequently found in these parts without any obvious cause Sometimes only one or two cases are seen sometimes they appear in considerable numbers At times it appears to affect a particular class of person such as stokers at other times these cases are impartially distributed among officers and men

I have no intention of discussing symptomatic œdema which is so commonly seen in beriberi, scurvy nephritis heart disease varicose veins, and other forms of venous stasis The cases I wish to draw attention to are those in which swelling of the feet and legs is the only symptom

It not infrequently happens that a man in perfect health often a young man and one who has perhaps, only come recently to the Tropics, notices that he has considerable swelling round the ankles On examination it is found to be due to œdema and deep pitting is well marked over the whole of the swollen area It frequently extends up the leg, and is easily made out over the tibia and perhaps up even as high as the knee There is no pain or tenderness, but there is one rather noticeable feature and that is, that it never reaches below the tops of the shoes or boots If the former are worn even unlaced the œdema will reach down to their upper edges If boots are worn the swelling will not extend lower than the upper part of them If no boots or shoes are worn the œdema will reach the bases of the toes It will thus be understood that these patients never complain of their foot wear having become too tight for them for their feet never swell within the boots, but should they put them on while œdema of the feet is present it will be necessary to tighten up the laces after a short time If now the feet be examined, probably only a trace of œdema remains though it is obvious above the place where the top of the boot or shoe comes by a sharp line of demarcation

If the patient be now put to bed, or his feet be kept horizontal the swelling will, to a great extent disappear but usually not completely I have often seen it very obvious before a man has turned out in the morning, after having spent six or eight hours in bed, though it is as a rule, less marked than it was the previous night I have known a person first notice the condition when he was having his bath directly after rising in the morning No complaint is made of the feet aching or being painful

If the patient [illegible] walk or swim or any other fo[illegible] the swelling will always diminish or may entirely disappear If he [illegible] or sits about as he is likely to do in a ship at sea then it will [illegible] readily These people feel well they are not short of breath th[illegible] or swim as far as they could previously It is always to be [illegible] exercise diminishes the condition far more quickly than sitting with the feet up or even lying down The heart shows no increase of rapidity and I have seen people who are known to have abnormally slow pulse rates as their usual condition with an increase in the rate Taken as a whole the pulse remains entirely unaffected in either direction, thus entirely differing from beriberi The urine is normal and contains no albumin neither is there a history of previous renal trouble The most careful examination fails to elicit any disordered cardiac action and I have examined these peoples blood for filaria malaria &c, and had blood counts done by experts yet I have never been able to find any abnormality or any deviation from normal One has of course seen dozens of cases of œdema when some abnormality has been discovered but for my present purpose I am entirely excluding these as they are easy enough of explanation

I have spent a considerable time in most parts of the East Indies the Red Sea Persian Gulf and many of the ports of Egypt Arabia and the Sudan I have discussed the condition with medical officers I have met both ashore and in ships on the station and I have never met one who was unfamiliar with the condition I have inquired as to their ideas of its origin and have derived much amusement from some of the replies I have got Almost everyone ascribes it to some local condition which is present in the place he happens to be serving but which is absent in some other place where there are quite as many cases In a ship in which I myself served, and in which I had observed my first cases, I asked my successor, who had recently had many cases, what his views were as to the cause It appeared that most of the cases he had seen had occurred in stokers, and he considered that it was due to them having to stand and walk on hot deck plates In another ship the seamen were mostly affected and the surgeon of that vessel considered it due to the men walking about the deck with no shoes on Another told me that it only occurred in men who were flat-footed Another medical officer told me he had never seen it in men who were not addicted to alcoholic excesses and they had all a history of having suffered from syphilis I was immediately able to produce an officer who was badly affected whose duties never took him near the engine room, who never walked about without shoes who never touched alcohol and who denied ever having exposed himself to venereal infection Others have said it was one of the bad results of teetotalism which is of course, ridiculous At Perim Dr Spence tells me he always has cases on the island, but most of them are not the least ill Here the dampness of the atmosphere combined with excessive heat gets the credit of causing it I have seen many cases in Jeddah, Port Sudan Aden, Bushire and various

parts of the Persian [illegible] I have moreover [illegible] in Mesopotamia [illegible] legs and in [illegible] atmosphere [illegible] difference of [illegible] by [illegible] no means uncommon [illegible] lips chap like the [illegible] with a shade temperature of [illegible] All kinds of [illegible] been recommended for it and I have tried most of them but [illegible] seen the slightest benefit arise

To anyone who has spent much time in the East the [illegible] strikes one is that it may be an early stage of beriberi which [illegible] commences with œdema of the feet and legs I took the [illegible] discussing the point with Colonel W H Willcox Consulting [illegible] the Forces in Mesopotamia who has done so much work on beriberi [illegible] and allied diseases He fully agreed with me that the [illegible] should be treated as if they were beriberi, as I had been doing [illegible] this object in view I had given them yeast dried fresh eggs, in [illegible] lean heart liver all of which are rich in antiberiberi vitamines [illegible] yeast The lime juice was given as some cases showed scorbutic symptoms as well I have not however been able to assure myself that any [illegible] things produce the slightest effect I admit that sometimes the [illegible] is present and sometimes it is scarcely to be made out, but it [illegible] does not in any way depend upon the diet for under like conditions it will be well marked one day and nearly absent the next and this with the greatest irregularity I have not hitherto been able to put a patient on an entirely salt free diet but I have seen it in people who never add a grain of salt to their food, and in others who eat large quantities of it at every meal I have watched cases for a year or more. Sometimes the feet have been swollen that beneath their socks one would have imagined there were large fomentations at other times the œdema is scarcely visible I have noticed one rather remarkable thing in those without a trace of [illegible] even in either leg and that is that one leg will always show more [illegible] than the other but that they will always keep the same proportion of swelling thus if one leg is severely swollen the other will show less if the bad leg is only slightly swollen the other will scarcely show [illegible] and so on

As to the actual cause of the trouble I regret to say that I must still acknowledge my ignorance It is easy enough to invent theories as I have shown above but it is even easier to disprove most of those I have heard and extraordinarily difficult to suggest a cause which will account for anything like all the cases one meets It has certainly nothing to do with length of residence in hot countries I have known people develop it after years of service in the Tropics and I have seen any number of natives with it on the other hand I have seen it in young healthy adults who have only just arrived from England and who have never been in the

Tropics but [illegible] quite convinced of this that however alarming it may appear [illegible] sight it certainly is not a condition to be taken too seriously. [illegible] I should not dream of invaliding a man just because he had [illegible] I should think of calling it beriberi in the absence of [illegible] peripheral neuritis with increased rapidity of the heart. Colonel Will[illegible] [illegible] point of this. He states that a person suffering from [illegible] in never do the "squatting test." This consists of making a man [illegible] hand his knees and thighs and assume the squatting position which all natives seem to find so comfortable. Now while he is in this attitude make him stand up again. This is perfectly easy for a normal person to do but a patient suffering from beriberi will use his hands and actually have to climb up his legs and will be unable to get up without this help. The cases I am describing can do this test as well as any normal person, and incidentally their knee jerks are normal and they have no alteration of sensation; in fact they show no sign of peripheral neuritis.

The œdema can always be diminished or made to entirely disappear either by massage, a brisk walk, bathing in cold water, or going for a swim. It will return with the greatest readiness if the patient stands about in dark or sits down to a table with the feet on the ground.

I have written this short paper more with the object of calling attention to this class of case than with the idea of suggesting a theory to account for it. In spite of all my observations I feel I can say nothing more satisfactory than that it is probably due to some altered blood condition which allows of fluid to pass into the tissues with greater readiness than normal, but what that condition is I do not pretend to know.

As regards treatment I know of nothing that will cause its disappearance for certain, other than exercise and massage, or to a less extent the recumbent posture. I have never been able to make out that the drinking of fluids in large or small quantities makes the slightest difference. My routine on seeing a case of œdema of the feet and ankles is this. First to very carefully investigate the patient for symptoms of beriberi or scurvy, then to examine the heart, kidneys and liver, and to inquire carefully into the habits and diet of the individual. A varied diet is certainly beneficial, and I usually prescribe fresh eggs, fish, vegetables, dhal and yeast. As regards meat it may, with most people, be diminished in amount. I feel sure that in the Tropics many people take far too much nitrogenous food. So often does one see a person take a diet so rich in fats and nitrogen, that their menu would be an excellent one in the arctic regions, though utterly unsuitable for hot weather. Then as regards the important matter of drink. In order to keep the kidneys well washed out a large quantity of fluids should be taken in the twenty-four hours. I am utterly opposed on general principles to limiting the amount of fluid taken, as I feel sure it hampers the excretory organs, produces constipation, increases blood pressure, and is in everyway harmful, while as regards the œdema it makes

[illegible] and [illegible] diluted with [illegible] [illegible] taken in any desired quantity. Alcohol should never [illegible] Too much is taken already without the physician or surgeon picking up the practice. It always lowers vitality, spoils the appetite and does harm. I have never known drugs do the least good, though rationally one would prescribe tonics if such appeared to be indicated. Colonel Willcox suggested calcium lactate but I have not had the opportunity of trying it. Cold weather always lessens the number of urines and the severity of the œdema.

THE ARNETH POLYMORPHONUCLEAR NEUTROPHIL LEUCOCYTE COUNT: AN INQUIRY INTO ITS VALUE AS AN INSTRUMENT OF PROGNOSIS AND DIAGNOSIS

By Temple [illegible]

The practical value of this or any other laboratory test should be judged by the extent to which it helps the clinical physician in the diagnosis of the cases of clinical importance. With this end in view an inquiry was made into the value of the Arneth polymorph count. The inquiry is simple and it will be seen that if the count was found to be of value in diagnosis particularly in cases of observation tuberculosis, the work of all hands, physicians, then appropriate words in the hospital ship would be [illegible] the question as to whether a patient should be admitted to the sanatorium or sent south would be much solaminous and if he were sent south he would be [illegible] to go with a correct diagnosis. In an investigation covering a period of eleven months numerous counts were performed and at the same time the detailed morphology of the nucleus of the polymorph and its staining reactions, were [illegible] under observation.

I—The Life History of the Polymorphonuclear Neutrophil Leucocyte of the Blood

The Arneth count is concerned with the nuclear changes in the polymorphs; to fully understand their significance it is necessary to review the normal life history of these cells so far as it is known. The polymorph [illegible] comparatively large cell with a neutrophil or slightly basophil cytoplasm containing numerous oxyphil granules. The nucleus is divided into [illegible] which are interconnected by more or less fine strands or bridges of chromatin. A trilobed nucleus is the most common. The red marrow is the source from which the polymorphs are derived. According to [illegible] the non granular mononuclear myeloblasts of the marrow give rise to the large type of neutrophil myelocyte which produces the small type of neutrophil myelocyte. The round central nucleus of this cell [illegible] eccentric, notched and incompletely divided to form the nucleus.

of the [illegible] divided as polymorphonuclear leucocytes. [illegible] the nuclear [illegible] three and four lobed [illegible] and [illegible] five or even six lobes.

[illegible] the development of the polymorphonuclear [illegible] has been confirmed by [illegible] the phagocytic powers of the leucocytes [illegible] found that the cells with lobed nuclei [illegible] the cells with unilobed nuclei [illegible] showed [illegible] such as might be expected to [illegible] in the [illegible] in old age.

II. — [illegible] Changes in the Polymorphonuclear Leucocytes in Disease.

[illegible] limits. They may [illegible] position [illegible] with different tints of nuclei and the movements [illegible] staining [illegible] of the nuclei. The intracellular nature of the [illegible] be changed [illegible] the lobes being rounded off. They may [illegible] numerous [illegible] stained [illegible] into the cytoplasm. In [illegible] stained [illegible] with characteristic changes [illegible] staining [illegible] in the [illegible] have been described by Gunner [illegible]. A [illegible] has [illegible] little opportunity for examining the [illegible] in these diseases. Attention was confined to the relative numbers of cells with two, three, four or more lobes to their nuclei. About the [illegible] Arneth described his method of dividing the polymorphonuclear [illegible] according to the number of nuclear lobes and counting the [illegible] of cells in each group. Arneth and others claim that such [illegible] of great value in diagnosis and prognosis and in controlling [illegible] with tuberculosis. It was with a view to testing some of the [illegible] and determining the sources of possible error in technique and in the interpretation of results that the following investigations were carried out.

III. — [illegible]

(1) *Technique.* — A blood film [illegible] with the edge of another slide or with a piece of cigarette paper. The even spreading of the [illegible] at a distance unless a differential leucocyte count has to be made. The film after drying is stained with Leishman's stain which [illegible] made up for long should have been kept in a well stoppered bottle. The distilled water for dilution must be fresh. Great care in the staining is necessary in order to show up the nuclei to the best advantage. When the film is ready it is

[illegible] immersion objective and a low powered [illegible] then counted [illegible] placed in [illegible] Arneth's five groups. A count of [illegible] cells [illegible] purposes. [illegible] negligible. [illegible] in which group to place [illegible]. With in some cells [illegible] in the [illegible] the greater [illegible] takes on [illegible] what [illegible] who dies [illegible] serve for the proper placing of every type of cell but one worker's rules will vary from another's and their counts will not correspond. Since each worker follows his own self evolved rules, the counts he performs will be strictly comparable with each other. His count for normal health will be the standard with which to compare the counts made by him in pathological conditions. Table I emphasizes the importance of this point. Arneth's normal count is given for comparison with that of the writer. The difference is very marked. The difference due to the personal factor may be somewhat altered by other factors which must be considered, namely, the comparatively few counts on which the writer's figures are based and the selected class on which the counts were made. Arneth's figures for normal health should be considered the standard for his own counts only; the writer's figures must be taken as the standard for his counts when performed on the same class as those upon whom he bases his normal count, namely naval ratings between the age limits of 17 and 18.

TABLE I.—THE ARNETH COUNT IN HEALTH. THE PERSONAL FACTOR

	A		B		
Number of lobes to nuclei	1	2	3	4	5 or more
Arneth	5	35	41	17	
Writer's average on eleven counts	4	28	50	16	2

In comparing counts it is usually sufficient to note the total number of cells in main Groups A and B.

(2) *Variations in Health.*—It is obvious that if marked variations occur in the Arneth count in health as they are found to occur in disease, the value of the count as an aid in the examination of patients suffering from disease will be considerably diminished. This aspect does not appear to have been discussed in any of the recent papers on the subject. With a view to deciding whether or no variations in the count occur in health, a series of counts were performed of which examples are given in

Tables II and III The persons dealt with in Table [illegible] under the same conditions at the times of the counts [illegible] intervals between them

TABLE II—NORMAL HEALTH THE CONSTANCY OF THE [illegible] INDIVIDUAL OVER LONG PERIODS OF TIME

	Date	1	2	3	4	5
A	January 1 1917	0	23	[illegible]	21	[illegible]
	October 21 1917	0	21	51	26	4
	October 29 1917	3	18	51	21	1
B	January 1 1917		32	51	10	
	November 13 1917	0	34	18	12	0

There are slight differences between the two counts done on B but they are small and within the limits of error due to technique The counts on A show yet smaller differences

The individual whose counts are recorded in Table III was performing usually sedentary work in the intervals between the counts Here again, the count changes but little The average of the four counts taken immediately before meals is almost exactly the same as that of the counts

TABLE III—NORMAL HEALTH VARIATIONS DURING THE TWENTY FOUR HOURS

		1	2	3	4	5 or more
10 p m Oct 23		3	25	51	19	2
3 a m Oct 21	Immediately on awaking	1	24	54	18	3
4 a m	Bath	4	20	52	22	2
8 a m	Breakfast	5	27	51	14	1
11 a m		0	18	50	27	5
1 p m	Lunch	4	18	53	22	3
1 30 p m		2	23	51	16	3
4 p m	Tea	1	31	53	10	5
4 30 p m		1	27	53	17	2
7 30 p m	Dinner	0	31	51	26	2
8 30 p m		3	16	51	27	3

[illegible] half to one hour after these meals The biggest difference between any two counts is that between the 8 a m count and 9 a m count [illegible] difference certainly is considerable and may have something to [illegible] relation to the bath taken at 7 o clock

[illegible] and other observations serve to indicate that for persons in normal health living under constant conditions the Arneth count is practically [illegible] If variations do occur they are very slight and are transitory [illegible] exert little influence upon the character of the count [illegible] more confidence may be placed in the significance of [illegible] in disease

Variations in Disease—The most common variation in disease is [illegible] of the count to the left i e an increase in the number [illegible] with the simpler types of nuclei

TABLE IV.—[illegible] OBSERVATIONS IN THE [illegible]

Table	Number of cases	Number of [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
A	11	11	Normal [illegible]	[illegible]	[illegible]	[illegible]	10.1	[illegible]
B	17	21	Acute [illegible] bacilli [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0
C	13	15	Acute tuberculosis (pulmonary) (Clinical evidence only)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D	18	38	Probably tuberculosis (pulmonary) (Clinical evidence inconclusive)	8.1	36.0	[illegible]	[illegible]	[illegible]
E	8	10	Pleurisy dry and with effusion (non purulent)	12.1	38.8	[illegible]	[illegible]	[illegible]
F	4	4	Adenitis cervical (clinically tuberculous)	10.3	10.7	[illegible]	[illegible]	1
G	1	1	Adenitis cervical (due to septic teeth)	1.0	26.0	[illegible]	[illegible]	[illegible]
H	2	3	Malaria (parasites found in blood)	1.7	38.7	[illegible]	[illegible]	[illegible]
I	4	5	Probably malaria (no parasites found)	12.[illegible]	18.8	[illegible]	[illegible]	[illegible]
K	7	7	Anæmia associated with debility and cardiac disease	3.3	[illegible]	[illegible]	[illegible]	[illegible]
L	11	13	Acute pyrexial diseases (various)	10.6	[illegible]	[illegible]	[illegible]	[illegible]
M	14	14	Subacute and chronic diseases (various)	4.8	29.1	[illegible]	[illegible]	[illegible]
N	1	3	Pernicious anæmia	0.0	11.0	[illegible]	[illegible]	[illegible]
O	1	7	Sprue (convalescent)	1.6	[illegible]	[illegible]	[illegible]	[illegible]

This means that one or both of two things has happened, namely, the young polymorphs have been passed into the blood as a reaction to the stimulus of the disease so that their numbers, actual and relative, have increased, and that the older types of polymorph have suffered from destructive processes which have reduced their numbers below normal. Dislocation to the right is rare. It occurs in a marked degree in pernicious anæmia (Table IV. N.) and in a lesser degree it has been noted in the writer's series of counts in a patient recovering from sprue (Table IV. O.) and also in an isolated case of acute appendicitis.

Dislocation to the left is extremely common, particularly so in tuberculosis with signs of general infection. It occurs in most acute diseases with general systemic symptoms, but is much more rare in chronic diseases unless of a tuberculous nature when, again, it may be very evident. Table IV. shows a series of average counts for different diseases. In the cases under observation no marked alterations in the count due to changes in the patient's temperature have been observed.

(4) *The Relation* [illegible] If it be true that [illegible] these are the [illegible] nucleus at the [illegible] stimulus holding to the [illegible] if the polymorph [illegible] then produce [illegible] period later still one would anticipate [illegible] cells with the multipartite nucleus the [illegible] the [illegible] of leucocytosis which have [illegible] their [illegible] their old age This theory is to a limited extent [illegible] value in prognosis. Although [illegible] general rule [illegible] of a polymorphonuclear leucocytosis there is [illegible] Arneth count to the left indicating the production of [illegible] numbers [illegible] forms yet there are so many exceptions to the rule [illegible] practice it is so difficult to get patients at the requisite early stage of the leucocytosis, that the fact is robbed of much of its practical value A large total polymorph count is often found with absolutely no dislocation of the Arneth count to the left, and sometimes there is even seen a dislocation to the right

A patient with a polymorphonuclear leucocytosis and an Arneth count showing an excess of young cells as a rule shows a reversion of the Arneth count to the normal on the subsidence of the leucocytosis but there is not necessarily in any one case any definite relationship between a polymorphonuclear leucocytosis and the type of Arneth count present (Table V)

No constant relationship has been observed to exist between the Arneth count and the number of large mononuclears lymphocytes, or other types of leucocytes

TABLE V —THE LACK OF RELATIONSHIP BETWEEN A POLYMORPHONUCLEAR LEUCOCYTOSIS AND THE TYPE OF ARNETH COUNT

Case	Disease	Polymorphs per c mm	1	2	3	4	5 or more
A	Phthisis	10 360	11	48	34	4	0
B	Phthisis	9 110	22	40	32	5	1
C	Acute pharyngitis	4 700	29	56	15	0	0
D	Acute Meckel's diverticulitis	17 300	5	43	37	14	1

(5) *Value in Diagnosis* —An intelligent use of the count in diagnosis is [illegible] dependent upon due consideration being paid to the facts mentioned in [illegible] principles It is essential that allowances should be made for the personal factor of the worker It is then found that the Arneth count is of great value in diagnosis as a confirmatory measure In Table IV it will be noted that in tuberculosis there is a definite dislocation to the left The cases in Group B were of varying severity but all showed

definite symptoms and the presence of [illegible] of tuberculous meningitis, the remainder [illegible] pulmonary tuberculosis. If Group B be compared with Group L it will be seen that the dislocation to the left is slight [illegible] in spite of the facts that the average temperature [illegible] Group L was higher than that of those in Group B and [illegible] total leucocyte count in Group L was 16,700 [illegible] 11,100 for Group B. Group L included such diseases [illegible] meningitis, acute cerebrospinal meningitis, acute appendicitis, acute pharyngitis, acute Meckel's diverticulitis, hepatic (amœbic) abscess. Of the twenty-one counts recorded in Group B only three could be regarded as normal, all the rest showed definite dislocation to the left.

Group E, though including so few counts, is very suggestive. The patients showed no general symptoms and the marked increase in numbers of the cells with one or two lobed nuclei could be explained by supposing that it was due to a specific reaction to tubercle. The case of non-tuberculous glandular is inserted for comparison (Group G).

In malaria also the blood shows a shifting of the Arneth count to the left. Other observers have often called attention to this fact. The count does not vary with variations in temperature, but is practically constant in any one case for the pyrexial and apyrexial periods. Thus in a suspected case of malaria, a count showing dislocation to the left is confirmatory of the diagnosis; a normal count is almost sufficient evidence to definitely exclude malaria.

In many cases placed in Group D the Arneth count was of diagnostic value. In no instance did it enable one to say that a case was definitely tuberculous, but it did enable one to differentiate somewhat between the cases. The clinical signs in this group were inconclusive; if the Arneth count showed definite shifting to the left the case was labelled "Observation—Pulmonary Tuberculosis"; otherwise, the diagnosis was "Chronic Bronchitis" or something similar. Clinical observation during the few days the patients were in hospital tended to confirm these diagnoses in nearly all instances.

A dislocation of the count to the right was seen in a case of pernicious anæmia, and others have recorded the same type of count in this disease. It is of but little value in diagnosis as the other blood changes are so much more marked and more easily recognised. Dislocation to the right occurs also in leprosy [4].

A large increase in the cells with the simpler nuclei is described in certain general infections, such as typhoid fever, scarlet fever, measles and diphtheria [5], but none of these diseases have come under observation during the period in which these counts were made.

(6) *Value in Prognosis.*—Time may determine that the most valuable use of the Arneth count will be in prognosis and in the control of treatment. Both are intimately related. It is claimed that frequent counts are very

useful [illegible] If the [illegible] to [illegible] to the [illegible] progress [illegible] shifts [illegible] the [illegible] starting [illegible]

The [illegible] of [illegible] which [illegible] tions [illegible] longer intervals for example one [illegible] in the counts may be noted in patient whose condition changes for better or for worse Movement takes place to the left in patients with tuberculosis who are not doing well to the right if improvement is taking place This fact is said to be of great value in prognosis [illegible] It has been impossible in a hospital ship to determine the truth of this as the patients make such short stays on board Table VI gives [illegible] counts performed on four different individuals The [illegible] between the counts are too short to enable one to draw any definite conclusions as to progress A B and D in so far as they are of any value seem to confirm the claim that with improvement in health the count returns towards normal and vice versa Similar changes occur in pneumonia and diphtheria [7]

TABLE VI — PULMONARY TUBERCULOSIS CHANGES IN THE PHYSICAL CONDITION WITH CONCOMITANT CHANGES IN THE ARMETH COUNT

	Diagnosis	Days in hospital	1		3	4	5 or more	Clinical Notes
A	Pulmonary Tuberculosis (T B found)	1	17	18	18	7	0	General improvement and gain in weight
		8	12	21	31	6	0	
		11	4	30	2	7	1	
B	Pulmonary Tuberculosis (T B found)	1	8	60	12	8	0	Temperature gradually falling
		6	1	42	53	11	0	
C	Pulmonary Tuberculosis (T B not found)	1	11	32	37	18	3	Slight improvement in condition
		10	11	1	12	1	0	
D	Pulmonary Tuberculosis (T B not found)	1	3	[illegible]	15	11	2	Gradual rise of temperature
		7	1	13	17	16	0	

SUMMARY

The polymorphonuclear neutrophil leucocytes are derived from the myelocytes of the red marrow They first have nuclei of simple form but as they mature the nuclei become lobed and twisted and there with a corresponding loss of functional activity they become more pronounced and multilobed Under certain conditions produced by disease the percentages of cells with nuclei with one two three four or more lobes which are constant in health become altered in most diseases an increase occurs in the percentages of cells with one or two lobes to the nuclei but in a few rare diseases the reverse takes place and the cells with multilobular nuclei are found in abnormally large numbers

[illegible] the Arneth count is [illegible] upon the [illegible] But that is in most cases the limit of its value In the present series of cases it cannot be said that it was of very material help except in the small groups F G H and J of Table IV (cervical adenitis and mitrum) It was probably of slight assistance in Group D also (pulmonary tuberculosis) In well developed tubercular diseases other signs were more obvious and more reliable as guides in diagnosis

The value of the Arneth count in prognosis is probably much greater than it is in diagnosis and in the future is likely to be the basis of the claim for the count to be retained as a useful sign in disease

In interpretating the count it is essential that the personal equation be allowed for

In conclusion I wish to express my thanks to Fleet Surgeon E Sutton and to Fleet Surgeon C L W Bunton for permission to publish these investigations, and to Sick Berth Steward W Holland for the great interest he has taken in them and for his valuable assistance in the preparation of blood films and the recording of counts

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[illegible] COMMISSION OF [illegible]

[illegible] Strogon [illegible]

[illegible] be launched con[illegible] [illegible] ces within a [illegible] [illegible] experience of the [illegible] [illegible] likely [illegible] [illegible] point [illegible] [illegible] ent is scr[illegible] [illegible] plan and the [illegible] very small [illegible] [illegible] England the [illegible] This was especially [illegible] for arriving in [illegible] not yet developed [illegible] Indian Expeditionary [illegible] weary days of the [illegible] Division besieged [illegible]

[illegible] gunboat building at Ala[illegible] October 1915

[illegible] troops at Ino in November 1914 up to the [illegible] and the subsequent occupation in September 1915 of [illegible] Arab village about 300 miles by river [illegible] the campaign [illegible] continuous success. During the [illegible] part of the campaign [illegible] the Tigris was in flood the sloops [illegible] [illegible] able to penetrate up river nearly as far as [illegible] about 80 miles above Basra sinking the Turkish gunboat Marmouna at

[illegible] to their draught however, they were unable [illegible] Naval flotilla in the succeeding fighting consisted of [illegible] launches, and gun barges, some of which [illegible] continued the need for more modern river [illegible] number of small shallow draught vessels [illegible] in pieces and assembled and [illegible] small village on the Persian side of the Shatt al Arab where the work [illegible] Anglo Persian Oil Company are situated. The work was carried out by British officers and their Indian assistants with the aid of native coolie labour. The illustration (fig. 1), shows the "Firefly" completing on the stocks and the hulls of the next two boats in a less advanced condition.

Fig. 1. The "Firefly" [illegible] November 1916.

The first to be completed was the "Firefly" [illegible] launched and commissioned on November 2, 1916. Officially designated "Small China Gunboat [illegible]" with knots from the name of the class [illegible] is formally "Peshawar class gunboat." "Firefly" was 120 ft long, [illegible] and with full complement of [illegible] and ammunition of about 3 ft 9 in draught. Her general appearance and comparative size is well shown in the illustration (fig. 2).

The single propeller worked in a tunnel built in the hull of the ship and [illegible] injury from the frequent groundings which are inevitable in the shallow tortuous reaches of the Tigris. The armament consisted of one [illegible] pounder Hotchkiss and two Maxim guns on [illegible]. The accommodation was very limited. A small cabin [illegible] on the starboard side of the superstructure (fig. 1) was provided for the [illegible] and held only a cabin and room bath room pantry and [illegible] for the hatch of the magazine was placed in the deck of the cabin. In contrast to a cooler cupboard to act as a store for mess gear. A small bass stool [illegible] small hanging flap table all of which promptly disintegrated when the [illegible] was fired. A similar though even smaller cabin was provided for the [illegible] officers. The men were accommodated in a portable cabin 16 ft long and 11 ft broad constructed of thin wood and provided with three windows [illegible] mosquito proof panels. This is shown in fig. 3.

The follow[illegible] Lieutenant in Command—[illegible] his R.N surgeon (in charge of group of boats) one chief petty officer (the coxswain), two petty officers five able seamen one E R A one stoker petty officer three stokers, and one wireless operator

We were lucky enough to obtain also a good Arab pilot, one Abdul Kerim but [illegible] to do without an interpreter, or a domestic as both the captain and myself [illegible] sound if somewhat narrow knowledge of cookery up to and including the [illegible] of a possible omelet, the absence of the latter was not very serious

[illegible] Alongside [illegible] Ferdinand [illegible]

On November [illegible] the Firefly sailed from Abadan to Basra and after [illegible] on board her guns ammunition and stores from the Franz Ferdinand a large Austrian prize steamer then used as a depot ship by the Royal Indian Marine, proceeded on her voyage up river to the small village of Amarah about 116 miles from Baghdad by river but only 30 miles by land from the famous Arch of Ctesiphon

The voyage up river was uneventful Stops were made at Qurna, Amarah

Sheikh Saad [illegible] the [illegible] battle of January 7, 1916, [illegible] towards took place [illegible] Amara [illegible] fuel and fresh provisions. We but we also took on board [illegible] plus [illegible] bales of compressed chaff or 'bhusa,' with which we [illegible] protection for certain exposed positions such as the rangefinder platform [illegible] the 1 to gun. We learned afterwards that the moral effect of our [illegible] to king vessel upon the riverine Arabs had been enormous. The Barr and Stroud rangefinder was considered to be a new sort of gun which shot both ways at once.

From the date of our arrival at Azizyeh where General Townshend's gallant force of 13,000 men had concentrated after their victory at Es Sinn until the general advance on the Suleimeh position on November 21 we were employed in reconnaissance work up river and occasionally in convoying native sailing

Fig. [illegible] Alongside Fresh [illegible] for [illegible] of [illegible]

vessels called mahailas, laden with supplies and [illegible] through difficult crossings or dangerous reaches where they were liable to be raided by hostile Arabs. At this time of year the Tigris is at its shallowest and navigation is rendered extremely difficult. River craft especially those drawing over 3 ft. of water, are frequently aground and may remain fast for two or three days together, or until they can get afloat again by having out anchors or by being towed off by a passing vessel. It is quite easy to find patches of under 2 ft. in depth, and as the channel is very tortuous and constantly shifting all river craft carry an Arab or Chaldean pilot, and two men are kept in the bows continually sounding with bamboo poles and calling out the depth in feet to the pilot. Sniping from hostile Arabs on either bank was a frequent occurrence, but, although annoying, this was not very dangerous and we had no casualties. As we used it in Mesopotamia the word has a different signification to that which it has in Europe. Here, the sniper is no skilled marksman but an Arab usually of one of the marsh or riverain tribes, who during the day will sell one eggs or chickens and will shoot fully snipe at night, or at any other time he thinks safe for his purpose. They very rarely fire from the shoulder and make bad shooting as a rule. Most of the

river built bore outward evidence of this shelling in the form of numerous bullet holes through their funnels, ventilating cowls and other exposed parts.

On November 19 we advanced with the Army from Amarah to a small village called El Kutunie and thence to Zeur where the enemy held a small position from which they were easily dislodged.

While steaming up from El Kutunie we encountered several floating mines of rather primitive design which we accounted for by rifle fire, one exploded the rest sank. After the Zeur position had been occupied we proceeded with the troops to Lajj, 18 miles south east of Baghdad, the site of the last encampment before the attempt to reach Baghdad. The force was concentrated at Lajj on November 21 and Ctesiphon was fought on November 22 and 23.

On the afternoon of November 21 the Naval flotilla sailed from Lajj and proceeded a few miles up river to take up a position in readiness to bombard a hostile redoubt at daybreak on November 23. Besides the "Firefly" which led the line the flotilla consisted of the "Comet," the "Samana," the "Shaitan" and barges carrying guns.

Fig. 5.—The banks of the Tigris [illegible] right [illegible] which [illegible] to [illegible]

The "Comet" was an old paddle steamer which before the war had been acting for many years as a sort of guard ship for the British Consul in Baghdad but which had been taken over by the Navy at the outbreak of hostilities. She was armed with two twelve pounders, but was an unlucky craft on account of her draught—nearly 5 ft.—and her fixed paddles. The "Shaitan" and "Samana" were tugs formerly destined for use in the construction of the Lajj-Baghdad railway by the Germans. They had been fitted with iron plates for protection and armed with twelve pounders. Two barges lashed one on each side to both sides, each carrying an old 9-in. field gun, and four horse boats, each fitted with a naval 17-in. long Tom—of Ladysmith fame—completed the Naval force. All of these ships except the "Firefly" had been in any trouble in action from the beginning of the campaign until the capture of Kut and bore scars and patches innumerable.

[illegible] were [illegible]
[illegible] wheels [illegible] in the [illegible]
Gunboat Red [illegible] we have [illegible] must [illegible]
[illegible] half hundred [illegible] during, in aeroplane [illegible] [illegible]
[illegible] by [illegible] then [illegible] got the [illegible] [illegible]
[illegible] doing most satisfactory and [illegible] [illegible] [illegible]
[illegible] dressing posts and photographs made [illegible] the vessels.

On remodeling shaping [illegible] the river a few miles above Lajj we received several heavy volleys in passing of about 60 yards from a party of infantry hidden in a well concealed trench on the right bank. Although the ship was struck in many places we had only one casualty an able seaman being shot through the right arm. The enemy were easily silenced by our smaller guns and the fire from the ships astern.

At dawn on November 23 General Townshend attacked the centre and north east flank of the Turkish position which consisted of two lines of trenches about 2 miles apart astride of the Tigris with a large redoubt known as the "Vital Point" between them. Nur ed din Bey was in command and had at his disposal some 13,000 regular troops and thirty eight guns besides numerous Arabs.

The object of the flotilla was to destroy a redoubt which had been made at a bend of the river known as Buston and this having been accomplished to bombard certain enemy works as directed by the General Staff and finally to proceed up river and having destroyed a Turkish bridge of boats at Qurarah a few miles below Baghdad to enter the city with General Townshend on board. None of our troops were advancing on the right bank of the river as it was thought that Nur ed din, the Turkish commander, when he was put to flight on the left bank would order his troops on the right bank to cross the river by the bridge mentioned above to reinforce him. Unfortunately for us a Turkish battery was situated in well concealed emplacements on our left flank on the right bank of a reach called Saifayfilah and shelled us persistently but by moving up and down the reach when their shells came too close all the ships avoided being hit except the Comet which was struck by a small shell but not seriously damaged. The lighting top of the Firefly which was visible over the steep banks of the river must have afforded a good mark for the Turkish gunners and the height of the bank was such as to prevent our making an effective reply to the enemy's fire as the 4 in. gun was unable to fire over the bank except at the extreme elevation. During the battle we painted the lighting top green instead of its original yellow colour in order to render it less conspicuous. Captain Wilfred Nunn C.B., C.M.G., D.S.O., the Senior Naval Officer arrived up river in a small motor boat shortly after the beginning of the battle and directed naval operations from the Firefly. On November 23 a heavy dust storm apparently obscured the view of the Turkish gunners for during the whole forenoon they dropped shells at the rate of four projectiles in three minutes in exactly one spot some 200 yards ahead of the ships. During these two days no communication with the Army was possible and little could be made out as to our progress from the ship. We did not learn until afterwards how our troops having penetrated the enemy's second position capturing 1,300 prisoners and eight guns had been forced to withdraw to the first position being heavily counter attacked by the Turks who had received numerous reinforcements. On November 24 and 25 the round had now commenced to Lajj and the 6th Division having sustained over 1,000 casualties and suffering severely from lack of water and transport fell back to Lajj on the night of the 25th and twenty miles behind their original black line battle avail ahead.

The ships lolled the troops down river gunning, the retreat and putting the transport steamers and barges [illegible] [illegible] been fatal [illegible] [illegible] [illegible] No positions suitable for defence were [illegible]

able at Lunj [illegible] troops being followed closely by the Turks and hard [illegible] irregular Arab cavalry it was necessary to withdraw by a long eight mile [illegible] Azraqah and thence to a small village known as Umm at Tubal, seven [illegible] land—but on [illegible] to continuous twists and turns of the river over twice as far [illegible] into from [illegible] where the force arrived on the morning of November 30. The withdrawal by water was very difficult as practically all the ships [illegible] round several times and much time was spent in hauling one another off [illegible] and towing heavy ammunition barges [illegible] through shallow crossings [illegible] frequently attacked by enemy horsemen.

The Sheikh which had [illegible] badly strained by towing heavy barges [illegible] shallow parts commenced leaking very badly during the [illegible] of November 30. Her seams opened and she was soon waterlogged and on the bottom. Efforts to re-float her were unavailing and the next evening the [illegible] and heavy shipping from both banks removed her guns ammunition and stores but after dismantling the engines and stripping the ship of anything that might be of use to the enemy we were obliged to abandon her and return to Umm at Tubal anchored to the west of the camp. The delay caused by transport difficulties both by water on account of the frequent groundings of all the ships and by land because of lack of mules after their heavy casualties at Qatrah gave the Turks time to come up in force. Their advance guard arrived in the evening with their camel guns the main force rapidly following. At about 8 p.m. they commenced to shell us and the ship was shaken several times with shrapnel but sustained only trifling damage and there were no casualties. We replied with 4 in. lyddite and with our six pounder and kept silenced their guns for a while. By dawn on December 1 the main Turkish force had arrived and we were astonished to see them actually encamping within 4,000 yards of our camps. Their temerity is probably explained by the fact that our Cavalry Brigade had gone on the previous day to protect the Army Commander Sir John Nixon who had been heavily attacked by hostile Arab cavalry lower down the river and the Turks had probably been informed by their Arab spies that the whole force was in retreat. They were probably as much surprised as we were for they received a hot reception and experienced a proof of the maxim that a retreating army carries a nasty sting in its tail. They attacked in strength at daybreak but our artillery opened fire and checked them inflicting heavy losses and giving our transport and infantry sufficient time to get away in the direction of Kut-el-Amara. The "Firefly" "Comet" and "Sumana" also opened fire and at about 7 a.m. the enemy directed his fire on the ships. No communication was possible with the Army and although it was apparent that a brisk rear guard action was in progress we did not then know that the troops had fallen back.

The eighth shell fired at the "Firefly" struck the ship which was now frequently hit. Perhaps owing to the thinness of the plating several shells did not explode notably two which entered the officers' cabin—the deck here was covered with ready lyddite shells (for this cabin also acts as ammunition passage, the 4 in. magazine being immediately below it) which however did not explode.

Shortly before eight o'clock the Captain (Lieutenant Eddis), was wounded in the right side and arm by numerous small splinters of shell. We were standing on the port side of the conning tower at the time, and while I was engaged in rendering him first aid another projectile entered the boiler, completely disabling the ship which for some minutes was enveloped in a dense cloud of smoke and steam. I then left the battery deck and made my way below to the engine room where a stoker who had been very severely scalded by the escaping steam was found in a moribund condition. In the mess of oil fuel and water it was impossible to do more than apply some dressings and make him as comfortable

as possible by the administration [illegible] engaged in fighting the ship he could not [illegible] would this have been wise as the engine [illegible] ship By this time the Comet which had [illegible] but made an attempt to save the Firefly [illegible] she went ashore and the Firefly during [illegible] on the mud The assaulting Turkish infantry [illegible] about 100 yards away on the bank of the river and it was necessary to abandon the [illegible] now thoroughly ablaze—her crew being taken off by the Sumana Shortly afterwards we were ordered to abandon the Firefly [illegible] close and heavy fire was managed to get to the Sumana [illegible] in the ship's dinghy

After a voyage rendered exciting by attacks from hostile Arabs—and by this time every Arab in the country was hostile—and by difficulties in safeguarding the transport barges and other river craft the Sumana reached Kut el Amara where the remainder of the 6th Division were hurriedly digging the trenches on December 2 I spent an interesting time in Kut assisting to pick up some of the wounded and in helping to weed out those who were considered sufficiently whole to remain behind for the siege The Sumana [illegible] the command of that very gallant officer Lieutenant Tudway D S C R N remained behind in Kut as did also the horseboats with their 4 7s The rest of the Naval personnel left Kut just before the investment was complete in a launch the Blosse Lynch and in a barge affectionately referred to as the Iron Duke belonging to the R N A S, arriving at Basra on December 8 I was lucky enough to find that the next gunboat the Dragonfly had just commissioned and so was able to proceed up river again in a few days to join General Aylmer's force at Ali el Gharbi

So ended the First Commission of the Firefly The Turks retaining her and renamed her the Sulimen Pak after the Prophet's barber was of those during the battle of Ctesiphon was fought During the subsequent fighting for the relief of Kut in the spring of 1916 we frequently caught sight of her lying up in the distance and occasionally fancied that we could distinguish from its sound it came over a shell from her 4 in gun She was recaptured in the final fighting Sir Stanley Maude's victorious march to Baghdad and entered the City of the Caliphs once again flying the White Ensign

Clinical and Practical Notes.

[illegible]STINAL FEVER AND THE MANIFESTATION OF ITS EARLY SYMPTOMS

[illegible] SURGEON H B HILL MB BS MEDICAL

[illegible] couple of the method of examining for early signs of rigidity in [illegible] of cerebrospinal fever I learnt it from Sir T J Horder, FRCP, when I was working under him during my sick leave The last case I saw in the Service [illegible] fully bears out what I have noticed before and the points I wish to bring forward that I will quote it The patient had a sudden onset of an acute illness forty eight hours before I saw him He was admitted to the hospital with a provisional diagnosis of influenza I saw him on admission The symptoms of cerebrospinal fever present were *headache, pyrexia and vomiting* These are cardinal symptoms when they occur together and no other cause is found The vomiting is obvious Pyrexia has sudden onset may be constant or irregular and remitting Headache varies in intensity This patient had a condition of headache which I term the bewildering type On being questioned about his head he replied I do not know what to do with it and his movements were those of a man who had plunged his head into water and [illegible] no towel to dry himself with was trying to wipe away the water with his hands He was in fact, trying to wipe away his headache in his bewilderment

Pyrexia varied from hour to hour This is a diagnostic sign of importance

Rigidity —Stiffness of muscles of back of neck and Kernig's sign *These are the most early symptoms of the almost dangerous impending and the most [illegible] of all signs*

Stiffness of the Muscles of the Neck —The whole point of this article was illustrated very well by the patient himself It is essential to remember always that the early stiffness of these muscles is only brought out by *repeated* movements and that when the stiffness appears further movements increase the stiffness This is characteristic

On examination I placed the man's occiput in the hollow of my hand and pushed his head forward This sign had evidently been tested for before but he more or less anticipated the movement himself and his head became fully flexed his chin resting on his chest and he made the following voluntary remark I don't mind that a bit Now that is quite enough to mislead one absolutely unless one bears in mind that early stiffness is only brought out by *repeated* movements I continued the movements a few times and his neck muscles became rigid and I was able to demonstrate the fact to some of the staff who were watching I continued the movement and his neck muscles became so stiff that I was able to raise his shoulders off the bed The was also demonstrated to be stiff This shows the increase of the rigidity on repeated movements If this method is employed one would never see again the phrase There is no [illegible] in the head brought forward in medical notes as a point for or against the diagnosis of cerebrospinal fever The stiffness can be demonstrated days after this reflex is seen Local lesions—such as otitis media &c —causing [illegible] movements of the neck should be eliminated

Kernig's Sign —The first time it was tried there was nothing very definite to be [illegible] The second movement produced slight limitation The third time I [illegible] to flex the lower leg on the flexed thigh until I felt the muscles [illegible] to resist I then tried to complete the full extension gently I failed

to do so. I did the [illegible] aloud. I gave not been [illegible] improvement at the end produced the full sign—that of partial stiffness.

The bacteriologist examined the case and the diagnosis of cerebrospinal fever was complete. I saw the cerebrospinal fluid, which was taken on the fourth day of the illness, and it was very turbid. I had the full report from the bacteriologist subsequently. No rigidity of muscles has been seen at any time during the course of the case except when it was brought out by these methods. The symptoms and signs here mentioned looked for in an acute illness of doubtful origin would bring to light a case of cerebrospinal fever in its early stages.

A CASE OF ACUTE EPIDEMIC ENCEPHALITIS

By Temporary Surgeon GEORGE E. S. WARD, M.D., B.S., M.R.C.P., R.N.
Royal Naval Hospital, Haslar.

In publishing this case I have preferred to call it one of acute epidemic encephalitis rather than botulism, because the *Bacillus botulinus* was never isolated from either the blood or excreta of the patient.

The history of the case is as follows:—

The patient a Naval officer, aged 30, had recently served for a period of fifteen months in the Persian Gulf. In 1917 he suffered from some obscure febrile condition lasting for about six months. Malaria was suspected, but no parasites were found in the blood. Eventually he was invalided home as a case of cholecystitis, and arrived at the Royal Naval Hospital, Haslar, on December 28, 1917. He appeared so newest, run down, but there were no signs of any actual disease. He was therefore given two months' unemployed time, and was then passed fit for shore service only, for a period of three months. On April 10, 1918, he had a mild attack of tonsillitis, and two days later he complained of a tingling pain in the left arm. On April 13 he had a rigor, and felt generally ill. Antipyretics gave him no relief, he was admitted to hospital under my care on April 15. On admission the temperature was 103° F., pulse 88, and respiration 22. Apart from some hypermethosis of the left forearm no signs of organic disease could be found. There was no rash. The urine was normal. In view of his former history his blood was examined, but no malarial parasites were found. His condition was regarded therefore as one of influenza, but in spite of large doses of aspirin the pyrexia continued. On April 17 he suddenly developed diplopia, and weakness of the external rectus muscle of the left eye was noticed. The tongue was thickly coated, and markedly tremulous. He was decidedly constipated. The history of sore throat followed by strabismus made one suspect diphtheria, though the general clinical appearances did not suggest this. A swab was taken from the throat, but no Klebs-Loeffler bacilli could be grown on nutrient media. At 4 a.m. on April 18 the patient was found wandering along the corridor. He stated he was on general duty for the day, and must get back to his ship. Later in the day he was quite vague about things to general and was delirious. When reasoned with, however, he was able to answer questions quite rationally. He recognized people quite well, but refused to believe it was his fourth day in hospital. There was no longer any a.m. strabismus, but he still had diplopia. The tongue remained furred and tremulous. He had a temperature of mind, and he was very constipated. The temperature was 101°. Temporary Surgeon Cahill kindly examined the other and performed lumbar puncture, but he could find no evidence of any organic disease of the nervous system. The eyes were examined by Staff Surgeon Hinson, R.N.V.R., but slight engorgement of the vocular was the only abnormality found in the optic discs. By 6 p.m. of the same day he had settled into the so-called typhoid

state. He was [illegible] muttered constantly to himself and picked at his bedclothes. Any [illegible] of the limbs was accompanied by marked tremor and from time to time [illegible] convulsions his whole body twitched violently. The upper eyelids [illegible] somewhat. There was no nystagmus. For the next ten days he remained [illegible] comatose state but the temperature began to fall a week after his [illegible] to hospital. During this semi comatose stage one of the most striking [illegible] was that however drowsy he seemed to be he could always be roused [illegible] his semi coma and would enter at once into conversation quite rational and take an active interest in things around him. When he was roused the pupils of the eyelids changed suddenly to a condition of abnormal retraction.

The following pathological and bacteriological tests were all negative —

No micro organisms could be cultivated from the blood.

The Widal reaction also the Wassermann reaction were negative.

The number of red and white blood corpuscles was normal.

The cerebro spinal fluid was quite clear and was not under increased tension. It contained only two lymphocytes per cubic millimetre and no excessive globulin and it gave a negative Wassermann reaction.

The patient never had any difficulty in swallowing nor was there any facial palsy. At times he had slight difficulty in commencing micturition, but it was never necessary to pass a catheter. The respiratory rate and pulse rate were never much above normal. The systolic blood pressure was only 105 mm. Hg. and the diastolic pressure was 50 mm. Hg. After April 28 th drowsiness substituted gradually the restlessness at night became less marked and he was not so constipated. About this time he began to complain of pain in the muscles of the upper part of both thighs which spread later to the calf muscles. This pain became very acute and caused the patient much distress and prevented him from sleeping. It was a cramp like pain and it seemed to be actually in the muscles. It did not yield at all readily to treatment with counter irritants such as heat massage, etc drugs. The cause of this pain could never be determined. It began to subside about a fortnight after its onset and eventually disappeared completely.

On May 6 he was allowed up for the first time. He made steady progress and was able to leave the hospital on May 28. Except for slight general weakness he appeared to be quite well.

This officer's illness occurred at a time when there was thought to be an epidemic of botulism. In this case however there is no evidence of his having eaten unsoaked meats, sausages or tinned foods. I venture to put this case on record because of its somewhat unusual features.

Treatment was carried out on purely symptomatic lines. Aspirin was given for the pyrexia and later on salol. Saline aperients were given daily during the first month of his illness. Bromides were used for a short period only, during the stage of acute delirium and strychnine was administered hypodermically when the coma was most marked but as it seemed to aggravate the twitching it was discontinued.

A CASE OF AINHUM

By Temporary Surgeon S. Saxon Barton, R.N.

As it must be rather unusual to meet a case of this obscure condition on board ship I am sending some notes on a case which has now been under observation for six months and which I think has progressed unusually rapidly.

A Kroeman, aged 25, joined the ship at the end of November 1917. When examined prior to entry he was found perfectly fit and nothing abnormal was noticed. He had only been in the ship a few weeks however, when he came to the sick bay one morning complaining that his right little toe was painful, and

pointed [illegible]
planned if [illegible]
I thought [illegible] abrasion and [illegible]
tion to the ot[illegible]
His heart [illegible] ation of his urine was negative. [illegible] malarial parasites were found in [illegible] and turned on the suppose on [illegible] of night [illegible] manifestation of a commencing [illegible] was much [illegible] he still complained of the pains in [illegible] tion revealed nothing, and as his urine was normal he was [illegible] on the attending list. On the third day I went over his nervous [illegible] carefully and it appeared to be normal except that I could not elicit [illegible] ankle jerks. I did not take much further interest in his case for nearly a month as he was quite able to carry on with his work but back he came again this time complaining about his feet alone. Examination showed a deep distinct ring right round the little toe of the right foot, with a small ulcerated place on the inner side the foot presenting all the characteristics of an ordinary case of mahum such as may frequently be seen on shore here amongst the natives. I now noticed that the little toe of the left foot was involved in a complete scleroderma this has remained dry and horny and has not progressed further. Since this time the lesion of the right foot has steadily progressed.

The chief point of interest about this case is the rapidity of the process. Most text books state that the course of the disease is from one to ten years while this case has progressed almost to a stage of amputation in a little over six months. There is a family history of the disease his father and two brothers having been affected with the same condition. A point worthy of note as possibly having some bearing on the aetiology besides the family history is the constancy with which he has complained of pains radiating down his thighs and the foot that his ankle jerks are absent.

I have unfortunately been quite unable to get a Wassermann reaction done out here either of the blood or of the cerebro spinal fluid. This prevents me from excluding syphilis of the central nervous system as a possible cause of any trophic disturbance. Still I am inclined to feel that this case in some ways helps to support the view that mahum is a so called trophic lesion and a manifestation of some obscure affection of the nervous system.

DERMATITIS VENENATA

BY THE MATE SURGEON T. G. MORTON, M.B., R.N.

The dictionary definition of diagnosis, namely to discover a disease by its characteristic symptoms appears at first sight to be complete. But in certain cases it is only half the battle—the other and more difficult half, is to find the factor in the causation of the disease—then only can one say that one has diagnosed the case. Perhaps in no other branch of medicine is this so often the case as in dermatology. It certainly requires no great skill in diagnosis to tell a patient with some skin affection that he is suffering from eczema that convenient rubbish heap to the practitioner and gold mine to the patent medicine vendor. The patient is the only one who probs not an attack follows attack with shorter and

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[1] Carlill H. The Diagnostic Importance of the Ankle Jerks. JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE April 1916.

[2] Carlill H. The Ankle Jerks of a Ship's Company. *Ibid* January 1917.

shorter respite until the condition becomes permanent. The following case is one in point —

C. B., a carpenter, came to the sick bay on September 1, 1917. He felt perfectly well, temperature and pulse normal, no pain or tenderness anywhere, but his eyes were completely hidden from view owing to the great swelling of his eyelids. The skin for the matter of an inch round his eyes was a dusky red, dry and felt firm and inoculated to the touch, no pain or tenderness at all. On inquiry I learned he had had two similar attacks before, the last one on August 12. The condition had been diagnosed as eczema and cellulitis respectively, and had rapidly recovered under no more stringent treatment than a starch dusting powder, rather a light weapon against cellulitis. I gave him a purge that night, and in the morning to my intense surprise there was nothing abnormal to be seen, the swelling had vanished, the skin was its normal colour. The only condi

tion I could think of as likely to produce the symptoms was angioneurotic oedema, which does occasionally disappear in this way under a light diet. I discharged him to duty with orders to report for inspection for a few days. The next appearance was on September 22, 1917, and this time the condition was somewhat different. The accompanying photograph was taken on this occasion. Only one eye was closed up, and in addition the dusky coloured skin was covered with drops of serum like the morning dew on a nasturtium leaf (this is best shown in the photograph to the right side of the nostril just above the mouth). I abandoned my angioneurotic oedema theory, and suspected some direct irritant, and the question arose, What was it? Dr Norman Walker states that in cases of dermatitis venenata, where the face alone is affected, the usual cause is some vegetable irritant such as the poison ivy (*Rhus toxicodendron*) in ladies' cosmetic preparations. But this man was a carpenter, the commonest irritants in his case

[illegible] experience. He had [illegible] with teak [illegible] every day. Tinpots [illegible] placed amongst the [illegible] occupied the first position [illegible] up the records in [illegible] it was found he had [illegible] just before the [illegible] analysed his commanding [illegible] his work with [illegible] and I strongly suspected [illegible] and that he was [illegible] Some two [illegible] to see me. [illegible] informed me that he [illegible] teak. He [illegible] had rather doubted his story [illegible] so not he had sprinkled some teak sawdust over his [illegible] the skin was reddened and slightly inflamed and he had [illegible] pretent it getting worse. When I saw his arms next day they [illegible] pieces and the patches looked like a giant urticaria. Several [illegible] had sprinkled themselves with the sawdust, with no ill results. [illegible] parts only in the attacks the affected area was so circumscribed [illegible] to always affected alone. I can only suggest that the skin be[illegible] resistant on the face, and that the man was probably bandy[illegible] were the determining factors for his self inflicted dermatitis [illegible] the thinner skin of his forearms but here the skin reacted in a different way. [illegible] blood seems to affect him and apart from this idiosyncrasy he [illegible]

A CASE OF PURULENT OPHTHALMIA

(Koch Weeks Bacillus.)

By Staff Surgeon Guy T. Buckeridge, R.N.

An example of this complaint seems to me worthy of report as it might possibly be confounded with gonorrhœal ophthalmia by those not well versed in ophthalmic practice. The case which came under my notice was of peculiar interest to me—as it was my own eyes that were affected. It occurred early in October whilst we were anchored in Sai Lagon Tedian port.

History and Progress of Case.—About midday I noticed a slight irritation of the right eye followed after an interval of about an hour by a mucous discharge which on examination proved to be due to a purulent exudation on the conjunctiva. Both the bulbar and palpebral conjunctivæ were injected and I noticed small masses of coagulated pus in the lower fornix. I irrigated the affected eye with a solution of hydrog. perchlor. (1 in 5,000). In a few hours time the lid became red and œdematous the injection of the conjunctiva reached the cornea and the constant secretion of curd like masses of pus made vision very difficult. A few days there were indications that the left eye had become infected and I commenced to have some anxiety as to whether I had been infected by a virulent strain of gonococci—especially as I had been treating some cases of gonorrhœa during the previous days. I sent ashore to Surgeon Herbert Perkins, R.N., asking him to come off to see me which he kindly did and referred my anxiety by telling me he had recently seen a very similar case, which had proved to be due to an acute Koch Weeks infection. He irrigated my eyes with a solution of hydrogen peroxide 10 vols. (1 to 3) and recommended me to continue with the hydrarg. perchloride solution (1 in 5,000). There was a slight elevation of temperature, 100.2° F., but I felt this was caused by a phlegmonous and Eustachian tube affection I was suffering from at the time. Enlargement of the preauricular glands was absent. By midnight the lids of both eyes were greatly swollen and inflamed, pus was freely exuding. The bulbar conjunctiva profoundly injected and the palpebral inflamed velvety and a certain amount of chemosis was present. I slept fairly well—only was roused by the constant secretion of

[illegible] but [illegible] in those [illegible] where the [illegible] of sclerotic [illegible] dramatic [illegible] vessels had [illegible] their normal proportions and other [illegible] only trace left [illegible] the affection was slight [illegible] hospital completely cured four days after admission [illegible] to culture [illegible] but there seems little doubt that the Koch Weeks bacillus was the causal agent

In distinguishing, it [illegible] from [illegible] ophthalmia I would draw attention to its extreme rapidity of onset the almost simultaneous infection of both eyes—the quick subsidence of a purulent exudation—together with the almost complete absence of pain and photophobia The acute ophthalmia due to Koch Weeks bacillus is more often found in children than adults

SESAMOID BONE IN THE TIBIALIS POSTICUS TENDON SIMULATING FRACTURE OF SCAPHOID

By Surgeon ALBERT L. MALONE M B B A R N

The presence of a sesamoid bone in the tibialis posticus tendon just proximal to its insertion into the tubercle of the scaphoid, is as far as I know not referred to in the usual English text books of surgery mention of it may however be found in the larger text books on anatomy Knowledge of such a condition is important in interpreting radiographs of the foot as unless both feet are photographed it might easily be mistaken for a fracture, especially where ligaments are suspected of being torn

The following case may be of interest as illustrating such a condition J S sustained injury to his left foot some four years ago by a surgical chest which he was carrying falling on the back of his left leg forcing his knee to the ground and the weight of the chest resting on his heel until it was removed some seconds later He was treated in hospital for two and a half months and then discharged to duty and has been in various hospitals at intervals since He recently came under my care complaining of severe pain over the mid tarsal joint and of being unable to walk because of it Clinical examination revealed some signs of previous injury, which are irrelative to this article and for brevity are omitted Radiographs from the case showed a small spur of bone on the proximal side of the dorsal aspect of astragalo scaphoid joint (probably due to a tear of the ligament) and also a small bone lying just posterior to the scaphoid tubercle and simulating fracture of that bone A similar bone was found in the same position in the opposite foot In fact this patient had a sesamoid bone developed in both tibialis posticus tendons which had only one foot been photographed might easily have been taken for a fracture

This condition is described by Gruber as the "Os Tibiale Externum" Quervain states it is fairly common in the female sex and was looked upon as a fracture attributed to dancing when it was termed "Dance Injury"

A CASE OF RENAL CALCULUS

By Temporary Surgeon F C GLADSTONE M B B A

A REPORT of the case of a man, who having had three attacks of renal colic and suffered from retention of urine, finally passed the stone *per urethram*, may be of interest

The patient a stoker, aged 35 was first seen by me on September 28 1912 He complained of pain in the lumbar region of the abdomen, which radiated into the left inguinal region The pain was continuous but varied in intensity on two

[illegible] double up [illegible] The pain [illegible] the patient [illegible] Day On [illegible] radiating [illegible] The urine [illegible] by the [illegible] and the patient [illegible]

The pain [illegible] Up to [illegible] attack of [illegible] had had a [illegible] day he had [illegible] pain at the [illegible]

A hot bottle [illegible] metal catheter [illegible] passing over [illegible] drawn off The [illegible] contained [illegible] Next day the patient had [illegible] tion and he [illegible] to dun

On the evening of [illegible] to the sick [illegible] ing of great pain in the penis [illegible] Instrument [illegible] passing urine when the [illegible] sick a sharp [illegible] the penis On examination [illegible] protruding [illegible] The calculus was firmly impacted [illegible] forceps After this the patient [illegible] in good health up to the time [illegible] The calculus was the size of a large [illegible] mulberry calculus and was [illegible] had any definite physical signs [illegible] sinking bay The urine never [illegible]

I consider that the patient [illegible] calculus without an operation [illegible] bladder search a month [illegible] to pass down the urethra [illegible] having to strain

A SUGGESTED IMPROVEMENT OF THE NAVAL CANVAS COT

By Staff Surgeon Alfred [illegible] R.N.

H.M. Hospital [illegible]

On the suggestion of Chief Sick Berth Steward William Hodder of [illegible] I was induced to have a small alteration made in the Naval canvas cot [illegible] board a very simple one and which can be carried out in any ship [illegible] ment The resultant increase in utility of the cot seems so obvious [illegible] venture to write a description of the alteration and append [illegible] photographs

At present the rope handles for carrying the cots are attached to the [illegible] the flaps their position is inconvenient for carrying as it is difficult [illegible] cot away from the legs of the bearers The suggested alteration is [illegible] handles fitted at the side of the cot—one near the head and the other near the [illegible]

The advantages gained from this alteration are twofold —

(1) The cot is more easy to carry the bearers legs do not get in the [illegible] causing jolting and unnecessary pain to the patient

(2) The side handles may be used for slinging the cots instead of the [illegible] at present fitted to the flaps When slung from the handles the patient's [illegible] head are easy of access for dressing purposes &c and also fractures of the lower limbs will be treated in the cots if the bed of the cot is stiffened by cross bars placed below the mattress

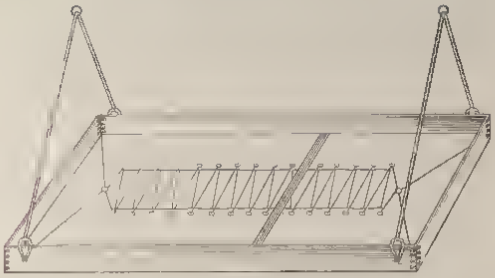

Fig. 1

The basket (fig. 1) is purely a transport and is intended to show the position of the patient, and also the method of suspension, the foot by [illegible]

The photograph (fig. 2) shows a cot slung [illegible] in order to show the method of suspension, and the [illegible] is important to observe the method by which the legs are bent [illegible] to prevent the legs from slipping, and the [illegible] when the patient [illegible] on the hip roll.

THE USE OF THE THOMAS SPLINT FOR SHIP WORK

By Surg. Surgeon CARL A. CHRISTIAN, R.N.

During the present war the Thomas splint has been found to be the most serviceable one for use in the field. It has these great advantages: Light [illegible] rigidity, comfort, easy application, effective extension can be obtained [illegible] traction, dressing can be applied and massage carried out without interfering with the extension; there is no constriction of the limb, an important item where gas gangrene is feared; the patient can be transported on a stretcher, and slung at any moment.

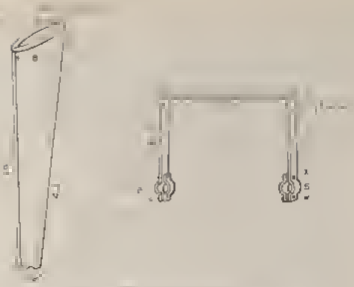

Fig. 3. Stretcher for transport. Splint applied as follows: Foot

[illegible] this splint would be [illegible] which [illegible] could be applied and patient [illegible] arrived in port. A supply of at [illegible] Having witnessed its use by the [illegible] with it on board ship and consulted [illegible] times. We devised the following [illegible] same which is shown in the plate (fig. 1).

The splint consists of a length of [illegible] (for applying extension [illegible] which is well padded and [illegible] in the plate. The weight is 15 lb. (pulley [illegible]

The gallows consists of a horizontal [illegible] piece of mild steel and designed to fit [illegible] secured to the poles by means of [illegible] seconds and is quite rigid. The gallows [illegible] is slung to the cross-bar [illegible] below. Figs. 1 and 3 show the splint [illegible] fractures of the arm but on [illegible] inconvenient for bed-ridden [illegible]

Extracts from Official Journals.

Sub-Lieut. on W. P. HIMSTON writes on Buoyancy of Nell Robertson's Stretcher, Rope Burns in Survivors from Torpedoed [illegible], Mental Condition Prevalence of Malaria and The Swimming Belt.

The difficulty often arises to remember what exactly were the [illegible] that one formed on the various events that arose and passed [illegible] everyday life at sea in war time, but my [illegible] in noting down [illegible] has been my lot to be associated, he is to record facts that to [illegible] of professional interest from a Naval medical standpoint.

One of the earliest experiences that came to my notice this year was the fact that Nell Robertson's stretcher [illegible] secured [illegible]. It happened thus. A party went to rescue the survivors in a ship sinking after having struck a mine. Of the survivors one was a man with a compound fracture of the leg. He was secured in Nell Robertson's stretcher and placed in a skiff on the way to the rescuing ship the skiff upset the man, the occupants into the sea. Naturally the patient was alarmed but this was immediately allayed when he found himself floating feet down with head and shoulders out of the water. The remainder of the crew in the water held on to the skiff and were able to keep the patient with them by holding on to the release strap. All were saved.

When stretching to assure the survivors of a shipwreck is of the question arises, what will be the extent of the case? It is rarely solved when the actual rescue has been effected and is not what one would expect in most previous experience. Rope burns all and sundry seem to have suffered and to the initiated it seems most reasonable that passengers by sea in ships should learn before proceeding on to the lifeboat a rope is about during in the hands or thighs. The palmar surface alone was involved but the work to dress two or three hundred cases of small degree burns of the hand is very strenuous. We dealt with each finger separately and [illegible] fingers. Undoubtedly some universal glove to screen the hands, so simple for rapidity and efficiency, as the number that one has dealt with by a trained staff is not very great. The thighs do not suffer nearly so severely as the hands, but [illegible] and groins are the maximum of the clothing [illegible].

The mental condition of men after prolonged periods in the water is most satisfactory immediately after rescue. The remote effect has not been seen as two days are the most one has had the chance of observing. Among my acquaintances was an officer of about my own age and relative standing in the Service. In December 1916 I [illegible] to meet him [illegible] and after exchanging a few of our experiences of which he appeared to have had a very dull time, he expressed his keen desire for further adventure. It came quite soon after as the ship he was in struck a mine and sank. Quite twelve months later I met him again and reminded him of his wish that had been realized. He remembered, however, that it was a very tame affair as it all happened like a clock would describe. No one was lost and no one injured, plenty of time to look after everything. After inquiring of other he had any remote result of the shock he acknowledged that he had been very upset and suffered sensitiveness to the slightest motion of the ship. The condition had not shown itself for quite a month after the accident and the opportunity of a rest presenting itself he had gone to hospital for fourteen days complete rest and diet. I saw him looking in to-day. He was a life total abstainer and a non smoker and for his good work in 1917 was

[illegible] led the D S O It was a [illegible] interesting [illegible] casually in a friend [illegible] learn that the shock may have after effects [illegible] which are [illegible] attributable to excess of alcohol or tobacco [illegible] assistant to help [illegible]

[illegible] to ships stationed [illegible] was a matter which [illegible] but nevertheless was interesting.

During the summer of 1917 three ships of [illegible] frequently [illegible] certain harbour where everything [illegible] the [illegible] of the [illegible] The Commanding Officers varied in [illegible] and the [illegible] accordingly. The senior ship [illegible] all [illegible] suffered [illegible] not to the extent [illegible] the senior anchorage the [illegible] The ship in which I am [illegible]

[illegible] applied to all [illegible] the body [illegible] to the personal [illegible] weather and [illegible] the belt [illegible] It was advisable to make the [illegible] the belt [illegible]

Fleet Surgeon A. W. [illegible]

The short [illegible] the majority [illegible] but one [illegible] opinion [illegible] in the [illegible] possibly [illegible] use of tobacco [illegible] the [illegible] of several [illegible] Any one of them [illegible] there are [illegible] not possible [illegible] [illegible] in a very favourable [illegible] all [illegible] [illegible] [illegible] the [illegible] [illegible] the [illegible] ship [illegible] Only [illegible] [illegible] [illegible] No. [illegible] loss of [illegible] No. [illegible] loss of weight [illegible]

[illegible] Congl [illegible] No [illegible] of weight [illegible]

[illegible]

[illegible]

[illegible]

The Secretary [illegible] the construction of Head[illegible].

Much [illegible] inspecting a ship [illegible] in regard to construction. The [illegible] wonders [illegible] ation. If such [illegible] were [illegible] in keeping the ship clean. The [illegible] heads [illegible] in the most [illegible] (1) be kept clean (2) be [illegible] be well [illegible] it is possible to carry [illegible] (3) The [illegible] sufficient fall to the [illegible] pipe behind it [illegible] platform. It is almost impossible to get at the [illegible] and thoroughly clean it. This space [illegible] The result is that cleanliness can only [illegible] a hose which leaves the whole [illegible] wet [illegible] for men's boots carry the moisture [illegible] labour expended in trying to keep the [illegible] by more attention to detail in con[illegible] objections be valid in construction [illegible] would be better if the pan were built so that [illegible] between the [illegible] and the pan instead of the pan being up against the [illegible] This [illegible] would render the spaces around the [illegible] accessible.

◆

Reviews.

[illegible] Operative Treatment [illegible] Author [illegible] Surgeon to [illegible] Volume [illegible] Surgery [illegible] Cassell and Co [illegible] 1890 [illegible] Complete [illegible] net

A review of this book was published [illegible] No 3 p 361 The present edition is somewhat [illegible] of the technical improvements recently effected and the [illegible] the treatment of old wounds old fractures and other [illegible] automatic distributor for intermittent irrigation [illegible] amount of manual labor and permitting [illegible] This has been invented as a result of experiments in [illegible] Compiègne laboratories and consists of an individual [illegible] and a clockwork device for making contact the current [illegible] raises a valve on the bottom of the reservoir [illegible] until the current ceases which time contact is [illegible] for two seconds One clock suffices to control any [illegible] enough for example to serve 60 or 1000 [illegible] As the [illegible] irrigations does not increase the work of the staff and it is [illegible] to renew the liquid in the [illegible] as often as possible [illegible] practised every half hour

[illegible] AND THEIR REPAIR [illegible] TREATMENT OF [illegible] Mortimer and G [illegible] Translated by [illegible] M D F R C S London Baillière Tindall and Cox [illegible] Illustrations 168 Price [illegible] net

[illegible] repugnant [illegible] and this [illegible] treatment involves [illegible] At the [illegible] slightly [illegible] by those [illegible] which [illegible] and which [illegible] or dental [illegible] restitution

The [illegible] jaws or of dental [illegible] by an [illegible] In the [illegible] of such [illegible] would [illegible] could [illegible] restorations [illegible] Stress is laid on the [illegible] to the fitting [illegible] emphasized [illegible] their [illegible] dolton

[illegible] left by frontal [illegible] will give rank [illegible] which avoids any [illegible] deformity

Fractures of the jaws [illegible] The gunning line in treatment which has shown [illegible] mustonic ally restored jaws as close if physiologically [illegible] of the corresponding teeth [illegible] fact well worth [illegible]

[illegible] no doubt [illegible] for any work [illegible] to lessen [illegible] surgeon himself may be [illegible] who has lost his nose [illegible] home The translator has [illegible] his task [illegible] The pugnacious the text where [illegible] with [illegible] thus cleaning up difficult [illegible] surgeons [illegible] particular [illegible] comprehend [illegible] being [illegible] a practical branch of surgery neglected [illegible] books It is well [illegible] the original illustrations apply illuminate [illegible] subject matter

[illegible] Wm Wm [illegible] Its Rutherford Morison F R C S [illegible] Surgery Dublin University London Henry Frowde and [illegible] to Stoughton [illegible] Pp 72 Illustrations [illegible] Price 2s 6d net

[illegible] paraffin now usually forms [illegible] antiseptic gauze [illegible] surgical work and [illegible] Morison has [illegible] its importance in the treatment of [illegible] suits [illegible] rightly points out that a [illegible] is essential In the monograph [illegible] stress is laid on the [illegible] necessity of cleansing the abscess thoroughly [illegible] the wound cavity [illegible] fluid with [illegible] sputum Bipp is finally [illegible] the excess removed From the very brief account we are not [illegible] that such excellent results are solely due to bipp On the other

[illegible] This preparation he used [illegible] careful surgeon will plan [illegible] these [illegible]

[illegible] Stumps: their Care and [illegible] By [illegible] Martin Higgins, F.R.C.S. London: Henry [illegible] Brighton: [illegible] 1918. Pp. xv + 328. Illustrations [illegible] Price [illegible]

The rich experience which Mr. Martin Higgins [illegible] in the Pavilion Military Hospital, Brighton, and Queen Mary's Hospital, Roehampton, has enabled him to unite the authority on the subject of amputation stumps. No doubt it is to be demanded that those who [illegible] the loss of a limb [illegible] shall be provided with the [illegible] prosthesis [illegible] to civil life [illegible] this is a fitting such an object may be reached.

In [illegible] many perplexing problems [illegible] among the following: [illegible] of the method of [illegible] in stumps, the use of mere [illegible] of painless [illegible] stumps, the bearing of the [illegible] upon [illegible] and other points of [illegible] in an [illegible] simple style. The [illegible] of artificial limbs and their mechanism of [illegible] complement [illegible]

The book is well worth a study by all [illegible] We commend it especially to those who [illegible] amputations.

Radiotherapy in Radiotherapy. By [illegible] M.D., [illegible] Captain R.A.M.C. (T.), [illegible] Department. [illegible] A. and C. Black. [illegible] 6/6 net. [illegible] text 100. Price [illegible]

This second edition, which [illegible] information is a comprehensive [illegible] of disease by radiation. The [illegible] Therapeutics (*b*) Radium [illegible] rays.

The problem is to [illegible] The results in one case [illegible] found problems which the author [illegible] that the explanation is a biologic [illegible] which responds to a particular type [illegible] changes in cells and vessels which [illegible] As to the relative merits of radium [illegible] the marked advance in the [illegible] to be more useful than radium [illegible]

A chapter of great interest [illegible] on the value of Exhibitions in Health [illegible] fully illustrated, showing [illegible] which interest in the present [illegible] with others. It must shield [illegible]

Minor Ailments. A Practical Handbook [illegible] Treatment. By M. [illegible] M.A., M.D. [illegible] Consulting Medical Officer to the Electrical Department of St. [illegible] Hospital

Seventh [illegible] L W Bin[illegible] (D Lond) Physi[illegible] Department [illegible] Hospital (Oil[illegible] Co Ltd [illegible] Pp xi + 188 Plates [illegible]

The deal[illegible] a pioneer and acknowledged authority in [illegible] this branch of medicine [illegible] Lincoln's [illegible] our knowledge on this subject w[illegible] the English language [illegible] the electro therapeutics [illegible] the one and on the other of the [illegible] In the electrical testing of [illegible] with the exception of which he had [illegible] particularly in relation to the time value of [illegible] tor who has brought the subject up to [illegible] has succeeded in making this seventh edition [illegible] former editions

A Text-book of Radi[illegible] By Edward Reginald Morton, M D, C M Tim[illegible] fer [illegible] R C S [illegible] in charge of the X-ray Department West London Hospital [illegible] Edition London Henry Kimpton 1918 Pp xvi + 64 [illegible] and illustrations 93 Price 10s 6d net

The author has in this [illegible] a certain amount of new matter and some parts have been revised but [illegible] if the book has not been materially altered Some new illustrations [illegible] the value of the work The volume does not aim at being in any way [illegible] exhaustive but rather to form a useful guide to those taking up radiology for the first time—and as such it can be thoroughly recommended

Human Intestinal Protozoa in the Near East By Temporary Lieutenant Colonel C M Wenyon R A M C and Temporary Captain P W O'Connor R A M C London John Bale Sons and Danielsson for the Wellcome Bureau of Scientific Research 1917 Pp 218 Price 10s 6d

This very interesting work details the study of the human intestinal protozoa in Egypt and the Near East undertaken by the authors at the suggestion of Sir William Bayliss in consultation with the Medical Advisory Board of the Mediterranean Expeditionary Force Both authors before commencing their work on the spot had an no quite knowledge of the subject and were thus specially qualified to carry out the investigations The value of the presence of amœbæ and their cysts in the fæces before the war was but little understood and the very careful investigation here recorded gives a good working basis for other researches The differential diagnosis of the various forms is clearly stated and excellent plates showing the characters of the organisms are given which are of the highest value The descriptions of the characters of the stools found in amœbic and bacillary dysenteries are particularly useful for rapid diagnosis That the *Entamœba histolytica* is the pathogenic form found in most acute cases is clearly demonstrated The authors never diagnosed a case as infected with *E histolytica* unless they found in the stool the characteristic quadrinucleate cysts of the parasite or the amœbæ themselves containing ingested red blood cells The occurrence of other forms as *Endolimax intestinalis*, which sometimes may be found in enormous numbers associated with much catarrhal mucous is proved but the fact that in a large proportion of cases its presence denotes no clinical manifestation and no danger to the patient is made very evident The non pathogenicity of *E coli* is now certain Organisms of the tetramitic, trichomonas

[illegible] other flagellates are frequently also [illegible] and of little importance.

[illegible] information above that only a small [illegible] are sick. The [illegible] themselves in [illegible] the real sources of danger for infection are the carriers [illegible] can only be cured by a thorough treatment with [illegible] iodide. [illegible] there are also cases which show that it is [illegible] established that chronic carriers in the cases of mild [illegible] they [illegible] The authors, however, state that it is impracticable [illegible] members of military men under war conditions. [illegible] to prevent the carriers as far as possible [illegible] reduce the possibility of acquiring the infection from [illegible] with [illegible] is liable to settle down in [illegible] smaller water [illegible] and thus [illegible] the [illegible] no symptoms in hospital is unnecessary and impractical.

In sanitation for dysentery there is quite a [illegible] how these pests are able to carry and distribute [illegible] important when dealing with cysts to note that [illegible] can be killed by the ordinary [illegible] is very fully treated in a large amount of experimental [illegible] out. Very great experience and care [illegible] found and in the work the reader has due [illegible] human intestinal flagellates [illegible] needless that such a [illegible]

In an appendix full details of [illegible] and other [illegible] practical protozoal work this book will be [illegible]

ABSCESS TO RECTUM, THE SURGICAL TREATMENT OF. By Ralph W. Hitchcock, M.D., Assistant Surgeon, Children's Hospital. London: Bailliere, Tindall and Cox. Price 3s. 6d. net.

In this book diseases are grouped [illegible] very convenient from the point of view of treatment, classified according to the organ affected [illegible] treatment appropriate. The author has [illegible] stories on a double basis, those which require the same treatment [illegible] which require different treatment. Thus these groups [illegible] regard to the lines of treatment. The diseases which are so classified are dealt with separately. The treatment common to the group is supplemented by that of the individual disease. [illegible] surgical treatment of the rectum [illegible] includes in such [illegible] chronic attacks of rheumatism, chronic cases of [illegible] with reservations, gout and rheumatic arthritis. The group [illegible] treated by iodide, bromide and [illegible] internally by hermosets, paints, massage, [illegible] electricity, and the special treatment of [illegible] in loose a method is put forward by which [illegible] the [illegible] would have the same dose [illegible] and sent to weak preparations [illegible] system would be permissible 2 to [illegible] to [illegible] preparations 5 to 15 [illegible]

Throughout the book are a large number of [illegible] of great value both to the practitioner and the [illegible] saving labour.

MINOR MEDICAL [illegible] TREATMENT By Leonard Williams M.D., Physician [illegible] Hospital Fourth Edition London Baillière Tindall & Cox [illegible] pp xii + 403 Price 7s 6d net

This well [illegible] in 1906 and very considerable alterations have been introduced [illegible] teaching edition Now the section on Constipation has been [illegible] the chapter on Change of Air has disappeared [illegible] placed by one on Mineral Springs Unsuccessful and a small chapter on Off Days has been added We [illegible] consider that the bulk of humanity is subject [illegible] less constantly to [illegible] of minor ailment though not a very large group [illegible] unscathed [illegible] it is a matter of the first importance to the rich and poor on [illegible] have a sound knowledge of the treatment of the petty diseases [illegible] think he is so frequently consulted in preference to the [illegible] military The author [illegible] the traits of his early days in the [illegible] of how he [illegible] the rich and public hood on the self [illegible] had to gain his experience [illegible] the [illegible] of general practice or by sitting at the feet of older colleagues

There is [illegible] on every page of this book It is full of interesting and original observations on all the common minor ailments and their treatment [illegible] useful formulæ [illegible] The author's style is a delight to the reader

MILITARY MEDICAL MANUALS.

The University of London Press has issued a series of Military Medical Manuals covering a wide field of war medicine and surgery and each volume is compiled by a recognized authority The whole is under the general editorship of Sir A Keogh G C B who writes an interesting general introduction The reviews in the following pages deal with seven books of this series

WOUNDS OF THE ABDOMEN By J Shaw Dunn Chief Surgeon at the Omni Hospital Edited by Sir Arbuthnot Lane Bart C B M S 1918 Pp xxvi + 89 Illustrations 17 plates 1 Price 5s net

From the knowledge gained in the earlier period of the war abdominal wounds were considered as so hopeless as they were at one time The evidence collected in this manual proves that such adverse conditions as difficulty in transport and delay in operation are being reduced to a minimum with more favourable results The expectant medical treatment Murphy's operation and laparotomy must all consider Fundamental It is shown now that the mortality [illegible] may be much lessened by [illegible] since a count is taken of those who reach the hospital [illegible] from the trenches By far the largest percentage of [illegible] wounds are produced by shell splinters or machine gun bullets The [illegible] conclusion that immediate laparotomy is the preferable treatment for all [illegible] abdominal wounds Failure is ascribed to delay in intervention [illegible] each the operating theatre with clinical signs of peritonitis it is [illegible] those hopeless Chloroform is pronounced to be the most suitable [illegible] and transfusion is condemned The book is intended for those who [illegible] the front line we can heartily recommend it to them

WOUNDS OF THE VESSELS By L Sencert Assistant Professor to the Faculty of Medicine Nancy Edited by F F Burghard C B M S, F R C S 1918 Pp xvi + 270 Illustrations 68, plates 2 Price 6s net

Up to the present no definitely recognized line of treatment has been formulated for the subject under review and so it is a matter for congratulation that the author has filled this gap by the publication of this volume The first part is devoted to wounds of the vessels in general while in the second part wounds of individual vessels are described Like the majority of surgeons who

possess the advantage of actual experience at the Front [illegible] of early intervention since this alone can obviate the [illegible] liable to result from the effusion of blood in the tissues [illegible] cases ligation must be practised which to be successful [illegible] complete excision of all damaged parts Reparative [illegible] indicated

The subject matter is presented sensibly the [illegible] decided point in its favour The illustrations [illegible] diagrammatic The book will prove of great [illegible] contact with war surgery

THE TREATMENT OF FRACTURES By R Jones [illegible] Faculty of Medicine London Published by H K Lewis [illegible] 1918 Vol I Fractures of the [illegible] 97 Price 6s net Vol II Fractures of the [illegible] Illustrations 126 Price 6s net

No one will deny that the man who [illegible] ideas and who follow the lines of [illegible] two volumes, it will be greatly [illegible] hitherto taken of the treatment of [illegible] sets forth that there still remains a [illegible] that the unit possesses the [illegible] organized, capable still of [illegible] insists will only be obtained by early [illegible] that sepsis may be avoided and the [illegible] as quickly as possible The principles of [illegible] then divided In this connection [illegible] immobilization These notions are [illegible] in their place Immediate isolation [illegible] pound fractures is the keynote [illegible] joint involved is singled out [illegible]

Immediate prophylactic total [illegible] routine method These are two [illegible] the orthodox teaching in this [illegible] facts and figures and in every [illegible] of the [illegible] Both these books will be [illegible] much controversy

The text is written in a trenchant [illegible] style [illegible] delightful In certain passages a [illegible] striking We congratulate the author on an original [illegible] work

THE AFTER EFFECTS OF WOUNDS IN BONES IN [illegible] Professor of Topographical Anatomy in the [illegible] Edited by R G Phaslie M S [illegible] F R C S Major I A M C [illegible] xii + 144 Illustrations 112 Price 6s net

This volume deals mainly with the treatment of [illegible] joints resulting from wounds received in [illegible] Quiescence of infection after open operation [illegible] attempt to remedy bone defects by means of grafts and [illegible] chapter Chronic traumatic osteomyelitis with its [illegible] occupies a prominent position in the book The pathology [illegible] ably discussed thereby proving that [illegible] or cavities due to [illegible]

sequestra will not heal by merely curetting [illegible] removal of the dead bone by a radical operation at an appropriate [illegible] is the only sound course to pursue. But the application of antiseptics is helped by hydrotherapy and the introduction of antiseptic pressure promises to be [illegible]. Removal of the sequestrum *per se* will not however [illegible] cure of a cavity remaining consequently emphasis is laid upon the [illegible] destroying and curetting by taking care to one will be able to think that the soft parts will collapse and obliterate the [illegible]. The large number of cases illustrations demonstrate the success of this procedure as at the same time show the importance of the need for waiting until the fistulation can be correctly termed permanent. The effect of malunited fractures [illegible] the knee joints forms a particularly instructive chapter. A large number [illegible] called inclosed joints are produced by the alteration in the line of axis of the or other bone—the immediate result of the malunion. The manner of dispensing of those man who refuse operative measures concludes a useful and instructive manual.

ARTIFICIAL LIMBS. By A. Broca, Professor in the Faculty of Medicine Paris and Dr. Duverquiet, Surgeon at the Rothschild Hospital. Edited and translated by R. C. Elmslie, M.B., F.R.C.S. 1918. Pp. xx + 160. Illustrations 210. Price 6s. net.

During the past few years probably no surgical appliances have received such [illegible] for supply and improvement as artificial limbs. How far this demand [illegible] will be discovered by the perusal of the pages of this little book [illegible] so abundantly illustrated. We perceive how the science of mechanics [illegible] interest to the manufacture of the most useful type and the slight but [illegible] alterations that are required to satisfy the needs of an individual case [illegible] considerations may be to a large extent neglected so long as a good [illegible] result is obtained. The various substitutes for the hand for [illegible] such as pistol, poker, leather cutter, plumber and brush [illegible] the very real advance that has been made in this region alone [illegible] extension by wood is preferred as the most suitable material after [illegible] The closing chapter on the rehabilitation of the disabled [illegible] excellent idea of the manner in which the French are backing such a [illegible].

The book is carefully put together and contains many novel and ingenious suggestions. The price of details in the fitting and the use of any appliance should be clearly understood by the surgeon ordering it, the patient who wears it and also the manufacturer who makes it. Should this ideal state of affairs come to pass there will be fewer disappointments to all concerned.

TYPHOID FEVER AND PARATYPHOID FEVERS (SYMPTOMATOLOGY, ETIOLOGY, PROPHYLAXIS). By H. Vincent and J. Muratet. Edited and translated by J. D. Rolleston, M.D. 1917. Pp. lxvii + 304. Price 6s. net.

This little book contains a very up to date summary of our present knowledge of the typhoid and paratyphoid group of fevers, giving English readers an excellent [illegible] of the work done by our French confreres to which we added some very [illegible] notes by the translator. It treats on the clinical features of the fevers, [illegible] bacteriology and bacteriology, giving special reference to the part these [illegible] have played in the present war, and how they are to be prevented. The [illegible] question as one might expect takes a very important place, for to [illegible] under the conditions of massing susceptible types of men so close [illegible] the prevalence of the disease is mainly due. The old idea that paratyphoid fevers are only mild forms comparatively to typhoid is shown not to be

[illegible] treat for [illegible]

For diagnosis [illegible] upon [illegible] certain [illegible] extensively practised. A [illegible] amount of space is devoted to the [illegible] of [illegible] Bail for isolating the organism a [illegible] by Eng[illegible] and perhaps too little value is accorded to agglutination tests. The [illegible] treatment by serum therapy is good, and requires careful reading but [illegible] is on hydro-therapy are rather sweeping. No mention is made of the use of [illegible] for diagnostic purposes.

Great stress is laid on the increased value of vaccines [illegible] by either as prepared by Vincent. Useful information is given on the points which [illegible] indicate the use of vaccines for therapeutic purposes. It should be given in the first two weeks and not too high a dose administered. Living vaccines are condemned.

Bibliologically the fact that patients are infective from one to twenty five days or more before symptoms are present is specially drawn attention to the organism living in the gall bladder and being passed out in the fæces during a prolonged incubation period. It may also be present in the urine and vomit. Indirect contagion by the hands, particularly with those employed in cooking has given large number of cases, and the statement that one must look for the worst is often very true. In war time the hands very frequently become infected from contaminated soil—even by cleaning boots. In discussing prophylaxis the statement that no rational methods can be carried out either in the Army or in the civil population without aid from the laboratory leads on to the importance of efficient antityphoid vaccination, the value of which as carried out by various nations is given by statistical tables. Many vaccines are now in general use and in several armies inoculations are compulsory. The value of typo vaccines has still to be demonstrated, but less reaction, longer immunity, and one dose necessary are advantages claimed. Re inoculations should be carried out after twelve months, and this is the general custom. The satisfactory low incidence of the fevers during the present war particularly in France due to protective vaccination is fully demonstrated.

The work is a handbook that all should read and gain great advantage from whether called upon for sanitary, field, or hospital duties.

DYSENTERIES, ASIATIC CHOLERA AND EXANTHEMATIC TYPHUS. By H. Vincent and L. Mirault. Edited with an Introduction by A. Balfour, C.M.G., M.D., Brevet Colonel R.A.M.C., and G. C. Low, M.D., Temp. Captain I.M.S. 1917. Pp. viii + 227. Price 6s. net.

This volume treats on three very important diseases and contains a very large amount of most useful information, much of which is comparatively new, and drawn from wide areas. Excepting for the first disease our European troops have been comparatively free owing to the elaborate protective measures which have been taken; the persistent presence of lice, however, must be a constant source of anxiety if typhus cases are introduced into any region where men are overworked or under great stress.

The first part, treating on the dysenteries occupies 96 pages and though other forms are recognized, bacillary and amœbic types alone are dealt with. A good deal of modern work is, however, not mentioned, particularly that of Wenyon and O'Connor, but the supplementary notes by the editor have made these omissions less important. The biology of the amœba is not efficient, and little is said on the pathology. One attack of bacillary dysentery is said to give immunity, but this

can only be partial as a Sluge infection will not p[illegible] ve sa The epidemiological characters and prophylaxis [illegible] however well described

The part on cholera is full of information and from a naval point of view the importance of the viability of the vibrio in salt water bilge water, and its survival at a cold temperature are points to be remembered also the great danger of infected hands carrying the disease necessitating the most extreme cleanliness and care Acid in fruits renders the organism rapidly inert The value of protective vaccination is demonstrated, but it is only of short duration

The third part on typhus describes clinically this comparatively little known disease very well and should be of great use and the methods of delousing as a prophylactic precaution are given very fully for now there is little doubt that the *Pediculus vestimenti* is the chief 'carrier' of the disease though the infecting agent has yet to be found

Abstracts and Translations.

SINCLAIR (J. A. B.) Air Chambers for the Navy Stretcher. *U. S. Naval Med. Bull.* 1918, vol. xii, No. 3, pp. 441-442.

Kapok jackets were first tried (three in all, one on patient on each side and a third round the stretcher) but were found useless for maintaining the Stokes stretcher in a correct position in the sea. Two galvanized iron air chambers (shown by illustrations and drawing) then were made, and after attachment to these to the stretcher on overboard experiment was carried out with successful results. There was no "dipping" the position was upright and vertical, and the sense of security striking, while the use of the arms was not impeded.

Conclusion. Air chamber attachments to the Stokes stretcher are practicable and cheap being made from scrap galvanized iron by the ship's carpenter. Similar chambers of sheet tin may be made at even less expense. Weight of stretcher (experimentation) 25.5 lb. Length of tanks 27 in. (mean). Capacity of tanks, 860 cubic in. each. Capacity of both tanks 1,720 cubic in., approximately 1 cubic ft. Distance of tank hinge or fulcrum from extreme forward end or head of stretcher 24 in. Total buoyancy of two tanks in salt water 64 lb. Weight of two tanks or chambers with iron rod arms, 11.5 lb. Weight of stretcher with tanks 40 lb. Buoyancy required to sustain average patient in salt water 30 lb. Tanks are readily detachable from stretcher.

W. L. M.

BLACKWELL (E. M.) Plan and Description of a Fleet Hospital Ship. *U. S. Naval Med. Bull.* 1918, vol. xii, No. 3, pp. 347-360.

(It is impossible to do justice to this very able article in the space at our disposal. The description and plans of a fleet hospital ship built as such are given in complete detail, a close study of which will repay the reader. Here we can only give a brief summary of the author's more important recommendations.)

In designing a hospital ship, probably the most essential feature is the proper grouping and management of the various compartments so that work can be carried out with the greatest convenience with as little loss of time, space and motion, and with as few assistants as possible. The designer must have a broad perspective and not favour one branch or specialty to the detriment of another. He should have long practical experience of a hospital ship in active service, and familiarity with the work, duties and requirements; theoretical knowledge cannot take the place of practical knowledge and experience. One large hospital ship is not so desirable as two of medium size. Hospital ships with normal capacities of about 200 beds, where the berths are not superimposed of 100 beds, which superimposed and of about 500 when filled to capacity, would meet requirements better than larger ships. The arrangement of the medical department of the ship, as approved by the Bureau of Medicine and Surgery, should be strictly adhered to by the constructors and should not be changed in any respect unless it interferes with the structural strength. There should be no unnecessary ornamentation, but everything should be plain and simple and there should be as few cracks, corners, angles and dead spaces as possible to harbour dust, dirt, vermin, &c. As the sole purpose of the ship is the care and treatment of the sick and wounded, the maximum of space should be assigned to the medical department. Rooms and compartments that have a good deal in common should be grouped close and conveniently to each other and there should be easy and convenient communication between different parts of the same deck and between

different decks, as nothing makes for delays and inefficiency more than bad communications

Eight plans show the writer's design for a hospital ship worked out after over eight years' close study of the subject and five years of practical experience in a hospital ship under varying conditions of active service with the Fleet They are drawn to scale and are sufficiently plain to show the Naval constructors the arrangements of the various compartments in the medical department, while at the same time making the plans and relations of the navigating and engineer departments intelligible Sufficient space has been given to each room and compartment for the installation of all necessary apparatus and equipment for the work therein and the various uses required of them After satisfactory planning the installation of the equipment is comparatively easy

The general characteristics of the ship in accordance with the plans, should be about as follows Length over all, 435 ft length waterline, 420 ft beam, 56 ft depth of hold, 40 ft draft, loaded 21 ft displacement about 8 500 tons engines (turbine) electric drive speed cruising 15 knots, speed, full power, 18 knots cruising radius about 8,000 miles fuel oil about 250,000 gallons The ship will have four decks in the hull two above and two below the waterline and four decks above the hull, including bridge and top of deckhouse making eight decks in all six of which will be above the waterline thus making the living spaces light and airy The stowing of heavy cargo weights and ballast below will be necessary, some of the oil and water tanks might be arranged to act as anti rolling tanks gyroscopes as stabilizers are of doubtful utility

The compartments, &c on each deck from bridge deck to hold, are described in detail and in accordance with the plans The *main operating room*, on the superstructure deck, is 35 ft long by 18 ft wide and 12 ft high with eleven large ports and opens into a lobby into which open the sterilizing room the wash room, the recovery and dressing room the sterilizing room and elevator On the aft part of the deck are six *isolation wards* and two detention rooms for contagious cases, with sixty six beds in all for the purpose each ward having a separate toilet including a water closet, a wash basin and shower bath Abaft of the wards are two rooms for hospital corps men in attendance Experience has shown that sixty six beds are not excessive for contagious cases The patients *recreation room*, located on the main deck is 18 ft wide and about 50 ft long extending clear across the ship with large ports, floors at each end, and a large hatch which will make it very light airy, and an excellent lounging place for convalescent patients On the main deck also are the dental, eye, ear, nose, and throat rooms a small operating room and the *x ray room* The *x ray room* is just abaft the small operating room It is 12 ft by 18 ft and connected with it is a dark room 6 ft by 12 ft The *x* ray machine will be placed against the bulkhead next to the small operating room, so that wires can be run from the machine to tubes at the operating table fluoroscopic examinations and photographic plates can be made while the patient is undergoing operation Similarly the wires can be extended to the main operating room, just above The *disinfecting room* on the main deck is 9 ft by 18 ft with a large steam disinfector opening into each of the rooms Infected articles are put in on left side, sterilized, and taken out on right side A ladder leads from the isolation wards to the left door of disinfecting room and a chute from the right disinfecting room to laundry The disinfector is outside and on after part of the deck, and abaft it is the incinerator

The *sick officers quarters* consists in all of twenty state rooms, eight on the superstructure deck, six (for junior officers) and six (for warrant officers) on the main deck Each room is 9 ft by 12 ft and there is through and through light and ventilation the separate suites have the necessary adjuncts including mess and recreation rooms The four general *medical and surgical wards* of the ship are located on the second or ward deck The inward wards have thirty two beds each, the aft wards forty six beds each and a quiet room of two beds is attached to each

ward. Between the wards are the adjunct rooms, consisting of office for surgeon and hospital corps men, pantry and diet kitchen, wash and toilet room and room for hospital corps men in charge of the wards. Between the adjunct rooms are a hydro therapeutic room, a thermo therapeutic room, and two dressing rooms.

The two *venereal wards* and adjuncts are at the extreme after part of the second deck, each ward having thirty two beds. A ladder leads down to the laundry, and there is also one leading to the venereal mess and recreation room on the deck above. A general *convalescent ward* of seventy two beds is on the third or berth deck with the necessary adjuncts, and also the convalescent patients' mess-room. In the forward part of this deck are four strong rooms for the insane long prison cells, and a small toilet for the accommodation of the insane and prisoners. 4 ft in front of these rooms is a heavy wire mesh partition. The *medical storerooms* are on the platform or storeroom deck, an elevator and loader coming down into a handling room between the storerooms. In installing shelves or bins for stowing medicines provisions, &c it is best when practicable to have them run athwartship, the sides and supports of the shelves acting as stays for the articles. The storerooms will be enclosed by heavy wire mesh screen to permit better circulation of air and inspection without the necessity of going inside.

The plans show that the contagious and venereal cases, laboratory animals, autopsy room, disinfector and incinerator are all on the after part of the ship and as far removed as possible from other patients with a minimum danger of infection spreading or of other disagreeable conditions arising. The offices laboratories operating and examining rooms are centrally and conveniently located (on the main deck) and are very accessible to each other, and by ladders and elevator to the decks above and below. Throughout the ship the elevators are very conveniently arranged and on the main deck space is provided for installation of two extension cranes with trolleys on them for hoisting patients aboard on stretchers.

Artificial ventilation above the ward deck will not be necessary, the natural ventilation supplemented by electric fans being sufficient. There should be good artificial ventilation on the ward deck and below. The supply system is best but all toilets below deck should have both supply and exhaust. For internal communication the ship should have a complete system of bells and telephones.

The berthing accommodation will be as follows —

	Medical department	Deck and engineer department
Officers	11	13
Chief Petty Officers	14	32
Hospital Corps	96	
Seamen branch	—	411
Engineer force		60
Stewards, cooks and messmen	30	19
Total	145	14

Patients	
Commissioned Officers	18
Warrant Officers	10
Surgical ward	32
Medical and special wards	30
Convalescent ward	—
Venereal wards	64
Isolation wards	64
Total	108

Each of the two venereal wards on the ward deck afford 48 square ft of deck space and 230 cubic ft of air space per patient; the other wards 30 square ft of deck space and 300 cubic ft of air space per patient. The isolation wards afford

25 square ft of deck space and 200 cubic ft of air space per patient but they are high above water and have better natural ventilation than other wards When the ship is not filled to more than half its capacity, there will be no necessity for having superimposed berths in the wards and the deck space and air space per patient will be doubled giving each from 50 to 60 square ft of deck space, and 400 to 500 cubic ft of air space The wards will accommodate 220 patients without having superimposed berths and this number would be entirely sufficient in ordinary times All the sick officers rooms will have 800 cubic ft or more per man which will be sufficient with the good ventilation afforded them

There are many details in the construction of a hospital ship which will require the constant supervision of a medical officer of experience and familiarity with the requirements to see that they are properly carried out for no matter how proficient the naval constructor may be there are many things bearing on the needs of the medical department which he does not understand and he cannot view them from the same standpoint, and appreciate what is a necessity as the medical officer does Therefore a medical officer or as many as are necessary should be detailed to confer and advise with the constructor and see that the intentions and ideas of the Bureau of Medicine and Surgery are carried out from the time the plans are begun until the ship is finished and completely equipped

W L M

Couvy (L.) and Duparric de la Rivière Note sur l'étiologie de la fièvre des tranchées *Compt rend Soc de Biol* 1918, tome 81, No 1, pp 22 28

In a very interesting paper the authors describe their researches on the etiology of trench fever, which is also known as "P U O," febris quintana, febris Volhynia, etc In their resumé they state that this constitutes a well established clinical entity The origin of the disease is a spirochaete found in the blood and urine It appears in two morphological varieties, a short form in the blood, and a long form in the liver and kidneys of the infected animals The guinea pig can be infected by inoculation of the blood of a man suffering from trench fever, if this is taken during a pyrexial period The animal shows a fever curve very similar to that found in man

To demonstrate the spirochaete, for which they suggest the name *S gallica* the animal should be killed in one of the pyrexial periods for the animals frequently recover from the disease The pathogenicity and immunity reactions of this spirochaete differentiate it from the spirochaete of icterohemorrhagica (hemorrhagic jaundice) the latter being very fatal to guinea pigs, generally in six to seven days and jaundice is produced The spirochete itself has many points of resemblance morphologically with that found in sodoku or rat bite fever

(It has now been definitely proved both in England and France that the louse is able to transmit the infection of trench fever from man to man but whether rats play any part in the spread of the disease is not known) P W B S

Munk (F) and Rocha Lima (H da) Course and Etiology of Trench Fever *Munch med. Wochnschr* 1917, No 42, pp 1357 1361

The German synonyms for trench fever are Volhynia fever, Werner His disease and five-day fever With regard to the last synonym in practically all articles great stress has been laid on the periodicity of the disease The exacerbations occur about the fifth day with a complete afebrile period of two to three days In Germany Werner and His first called attention to the disease at Warsaw in 1916

The authors of these articles have carefully reviewed both the reported symptoms of the disease and the research work in connection with it A symptom that they call attention to and one not usually reported is the occurrence of painful areas at the exit of the nerves

The disease occurs sporadically [illegible] Poland and [illegible] is endemic in certain areas

[illegible]

(1) On the eastern front [illegible] other febrile illnesses were observed which [illegible] diseases hitherto known to [illegible]

(2) The fever had phenomena [illegible] partly a contained type [illegible] proved

(3) The clinical phenomena of the [illegible] cannot recognize any local anatomical [illegible]

(4) The bodies which have been [illegible] source of the disease do not appear exclusively [illegible] this disease in some typical cases the [illegible] and differentiation from other febrile diseases [illegible] finding of these bodies Their etiological [illegible]

(5) The illness does not occur exclusively [illegible] territories as well as in hospitals as a home [illegible] by lice is not probable [illegible]

DOPTER La méningite cérébro spinale [illegible] *Bull Acad Méd*, 1918, vol 79 No 8 pp 185

The author gives the following statistics [illegible] During the present war cerebrospinal meningitis has been comparatively infrequent in France In 1915, there were 1 073 cases, in 1916 [illegible] and [illegible] 1917 409 The percentage among the effectives was less [illegible] per 10 000 [illegible] 1 8 in 1916 and 1 5 in 1917 This low rate is probably due to the more open air life and less crowding of individuals together In peace time the disease is most prevalent in cold weather commencing in December and having its maximum in March but now it continues to appear in small numbers throughout the summer also The disease tends to be most common in camps of instruction often following the arrival of new entries and appears to be induced by fatigue of the voyage or cold in transport Generally speaking it is endemic and not epidemic few cases occurring at isolated places and undoubtedly due to the presence of carriers

The etiological facts are interesting In 1915 the greater number were due to the true meningococcus (A of Nicolle) though in certain places parameningococci and pseudo meningococci were isolated In 1916, the parameningococci (B and C) were most frequent, and in 1917 meningococci and parameningococci were about equal in number Also in certain zones meningococcus A alone was found in others B in others still equally A and B

In spite of the inherent difficulties of armies in the hold prophylactic measures have been carried out as in times of peace thanks to the creation of many army laboratories, infective centres have been quickly recognized, the cases isolated, the immediate contacts examined and the carriers among them isolated, and it is noted that the number of these has not been high By these means any extensive spread has been prevented, and so there the low incidence of the disease is undoubtedly due P W B S

VINCENT (H) Sur la Prophylaxie de la fièvre de Malta par l'Immunisation active des animaux vecteurs du germe *Compt rend Acad Scien* 1918 vol 166 No 5 pp 359 362

The importance of goats in the Mediterranean area renders it very necessary to protect them as far as possible from infection and the fact that they are the most common animal carriers of the *M melitensis* led the author to utilize

them for experimental work. The immunization by injections was considered unwise from a public health point of view, so that the author devised the following method for immunization which has been most successful. A polyvalent vaccine, containing ten strains of the *M. melitensis* and one of *paramelitensis*, was made, killed, and standardized to 1,000 million per c.c. Two injections of 2 c.c. each were given subcutaneously to the goats at intervals of five to eight days. To test the degree of immunity, goats thus treated were inoculated either subcutaneously, intravenously, or intraperitoneally with massive doses of virulent cultures and some were given it in the food; all these were found to be quite immune. Zammit and others have shown that the micrococcus can be recovered from the organs of experimentally infected animals for sixteen months, but in post mortems of the immunized and subsequently inoculated goats, both organs were found to be sterile. Three hundred animals have been tested with satisfactory results. This method, if carried out generally with goats, would not only protect them from infection but would indirectly prevent infection of man, a consummation greatly to be desired. P. W. B. S.

CHAVENEIX (H.) and BLETON (G.). Polyarthritis is the result of Treatment by Salvarsan Preparations. *Compt. rend. Soc. de Biol.* 1918, tome 81, pp. 340-340.

In patients, especially women, treated by arsenobenzol injections and more particularly by neo-arsenobenzol (914), a group of arthralgic symptoms has been noticed in about 3 per cent. It generally appears between the courses of injections, often a fortnight after they have been stopped, and in patients who have been fully treated with arsenic. This syndrome, which is fairly constant, appears to be due to the arsenic and not to be comparable to a pathic recurrence, as it is also seen in non-luetic patients. Beginning as vague pains, particularly in the knees, it may eventually be widespread; the pain is chiefly in the muscular insertions and para-articular sacs, for example behind the knees and in the subdeltoid bursa; there is no obvious change in these situations, but the finger-joints are nearly always swollen. The worst time of the day is in the morning on waking, when patients feel as if movement was impossible. The symptoms persist for two to four weeks and usually are not affected by a fresh course of arsenical treatment. (The reader will probably feel that the possibility of arsenical neuritis requires consideration.) H. D. R.

News of the Service.

BIRTH

[illegible] Chalfont Street [illegible]

CASUALTIES

[illegible] Surgeon [illegible] (Supplemental [illegible] Temporary Surgeon [illegible] (Supplemental [illegible]

Wounded [illegible] Surgeon [illegible] Atkinson [illegible] Surgeon [illegible]

Wounded [illegible] Temporary Staff Surgeon [illegible] (A [illegible] D.S.O. M.C. [illegible]

HONOURS AWARDED

[illegible] Officers —

[illegible] Service Order

[illegible] Surgeon [illegible] Atkinson, R.N.

[illegible] Royal Marine [illegible] Bradford, M.B., D.S.O. [illegible] greatest [illegible] by his fearless [illegible] to duty. He [illegible]

Surgeon [illegible] William Bradburn, M.B., R.N. [illegible] with the Royal Naval Division in Gallipoli [illegible] Medal [illegible] Royal Naval Division in Gallipoli [illegible] good work [illegible]

[illegible] Surgeon

Surgeon [illegible] Tasson, M.B., R. [illegible] Medal [illegible] Battle [illegible] Gallipoli.

[illegible]

[illegible] Order of the Distinguished Service Order

Surgeon [illegible] Clock, M.C., R.N. (Ret.) [illegible]

By his devotion to duty [illegible] medically saved [illegible] Wh[illegible] once commenced [illegible] to be ended and as all the sick bay staff [illegible] to be alone. After the [illegible] was damaged he had to work by candle light and [illegible]

The King has [illegible] graciously pleased to approve of the award of the Distinguished Service Cross to the undermentioned officers.

Surgeon William Tilde Clegg, M.B., R.N. (Ret.) [illegible]

Was in charge of the [illegible] on the upper deck of a [illegible] Mole to reconnoitre [illegible] Lieutenant he was protecting with his [illegible] upper deck of a [illegible] and [illegible] close to the [illegible] leaper. He [illegible] work [illegible] personal exposure [illegible] patients [illegible]

Sp[illegible]

Surgeon [illegible] Martin, R.N., H.M. Motor [illegible] [illegible] Brigade in [illegible] Battalion [illegible] Brigade [illegible] Battalion [illegible] [illegible] to the [illegible]

Surgeon [illegible] R.N.V.R.
[illegible]
Officers [illegible] and crews [illegible]
Cap[illegible] [illegible]
[illegible] Medal [illegible]
Staff [illegible] R.N. (V.) [illegible]
[illegible] exaggerated [illegible] conspicuous [illegible] and [illegible]
[illegible]
[illegible]
[illegible]
[illegible] Work [illegible] honourable [illegible]
[illegible] *July* [illegible] 1918

[illegible] H. H. Allen [illegible] M.C., R.N., and Officer [illegible] Ferris, for [illegible] gallantry and conspicuous [illegible] in action.
Temporary [illegible] R.N.

June 21, 1918

Mentioned in Despatches for action with Enemy Destroyers off the Belgian Coast on March [illegible]
Surgeon [illegible]

July 24, 1918

The following [illegible] in Despatches by Vice-Admiral Sir Roger J. B. Keyes, K.C.B., M.G., [illegible] Dover Patrol for distinguished services on the night of April [illegible] —
Surgeon Sidney W. H. Grimwade, M.B., R.N.
Surgeon Arthur Cecil Vaughan Dixon, R.N.
Surgeon Richard Milton Payne, R.N.
Surgeon Honorary Philip Cornelius Toll, R.N.V.R.
Surgeon [illegible] Francis Alexander [illegible], R.N.V.R.

August 7, 1918

Mentioned in Despatches for service in action with Enemy Light Cruisers which attacked Norwegian Convoy — October 1917
Surgeon Probationer [illegible] Christie Barclay, R.N.V.R. (killed in action)
Mentioned in Despatches for service in Mesopotamia and Persia in Gull —
Surgeon James Percy Starkey, D.S.C., R.N.

August 28, 1918

Mentioned in Despatches by Vice-Admiral Sir Roger J. B. Keyes, K.C.B., C.M.G., C.V.O., D.S.O., Commanding the Dover Patrol, for good service in attending wounded and during the subsequent [illegible] of wounded at sea off the coast on the second Blocking operation against Ostend on the night of May 9/10, 1918 —
Surgeon Stanley S. Beard, R.N.
Surgeon Roger Buddle, M.B., R.N.
Surgeon Bernard S. Collings, R.N.

DECORATIONS CONFERRED BY THE PRESIDENT OF THE FRENCH REPUBLIC

Legion of Honour

Officer — Surgeon General James L. Smith, C.B., M.V.O., M.B., R.N.
Deputy Surgeon General Alexander G. Wilsey, R.N.
Chevalier — Fleet Surgeon Trevor K. J. A. Dalton, C.M.G., R.N.
Fleet Surgeon Robert H. Jamieson, R.N.
Fleet Surgeon Alfred J. Howitt, R.N.

DECORATIONS CONFERRED BY HIS MAJESTY THE KING OF THE BELGIANS

Officer — Staff Surgeon Henry Cooper, D.S.O., R.N.

DECORATIONS CONFERRED BY HIS MAJESTY THE KING OF THE HELLENES

[illegible] *Officer* — Staff Surgeon James Campbell Bilington, R.N.

PROMOTIONS

[illegible] Barbour, M.P., Samuel N. McBean, M.B., and John [illegible] Staff Surgeon (Lieut.) [illegible] August 1, 1918
[illegible] Surgeon [illegible] August 1, 1918 [illegible] Sidney W. Grimwade, M.B.
[illegible] Surgeon [illegible] Edward Vixon Brewer, Quinlin

APPOINTMENTS

JUNE

[illegible] R Mc M [illegible] Royal Naval Division R Tuddle M B to the Virginia, addl. [illegible] C de M M [illegible] Argonaut J R Warburton to the Cambridge, addl. T L P [illegible] H T H M B to the Dalhousie W D Syme to the [illegible] addl. J M Barron to the Cambridge A C Rayburgh [illegible] J H Blackburn to the Resolution W D Trainman to the [illegible]

[illegible]

[illegible] Hippo N [illegible] Bn Gen T E D Keeffe M B to the March [illegible] the Crescent W J Mal[illegible] to K S Hospital Malta L C Sewell [illegible] to E Bolton Hyde Hospital John Macdonald M H to [illegible] R W [illegible] Hall in H Dolphin H Bn [illegible] Rosith Dockyard E S Day Age [illegible] H in the Tiger [illegible] R R Hutton to the Victory addl. [illegible] Ewing to the W [illegible] B Fell H Haslar Hospital S Bradburn [illegible] Bunda to the Vernon addl. A C Maclean M B to the [illegible] M [illegible] H B V [illegible] R N Sutton to Bundaberg J Cameron M B to the [illegible] addl. [illegible] Mason to the Victory addl. S Tarleton M B to Plymouth Hospital addl. [illegible] H S Miller to the Indus J MacDuan to the M B [illegible] Dunfield Naval Hospital J C [illegible] D Vaughan to the Minerva addl. [illegible] Hardick addl. [illegible] H I S [illegible] to Gosport Hospital R A Rankin [illegible] M [illegible] F S Hogg M B E A [illegible] to the Hibernia addl. W H [illegible] Y Murray addl. M B H S Sphere J I Shannon to G to the S [illegible] H I [illegible] to Gosport C V Rutherford R M [illegible] Dal J B Renny M [illegible] R V R [illegible] H [illegible] addl. W H V S [illegible] M B [illegible] H [illegible] M B [illegible] H S Thomas H to C [illegible] V H [illegible] R A V [illegible] H [illegible] O B Brown to H Washington J [illegible]

[illegible] S [illegible] H [illegible] H A F [illegible] W [illegible] M B [illegible] the [illegible] Hutchinson A D Gray I R C S [illegible] Hampton [illegible] Glass J S Fell to Plymouth Hospital [illegible] W [illegible] H [illegible] W [illegible] the Vernon addl. H S [illegible] M B [illegible] [illegible] H [illegible] Vernon addl. G I Mullen [illegible] B [illegible] [illegible] W [illegible] Horne M B to the Cressy addl. T F [illegible] H [illegible] E V L [illegible] H R B Keith to the hospital Tip Sandhurst [illegible] V R W [illegible] to the Victory addl. [illegible] Wood to [illegible] A D Brownhalt to Haslar Hospital H M [illegible] V [illegible] addl. V [illegible] [illegible] H Bolingl W Bell M B to the [illegible] H [illegible] addl. R A M [illegible] to J V Marquise M B to Plymouth [illegible] H M B [illegible] [illegible] J Ellis M V to the Rhamnus D S Robinson [illegible] V Hospital M [illegible] M M [illegible] M B to R N Sick Quarters Forth [illegible] H [illegible] R N Sick [illegible] H [illegible] Hanes M B to the Excellent [illegible] Vernon addl. H V [illegible] A M [illegible] to Haslar Hospital [illegible] B Jones and G [illegible] Hospital [illegible] V S [illegible] M [illegible] the Victory addl. A L C Cleg M B, [illegible] addl. T W [illegible] H [illegible] to the Iron Duke F H Hogg M B to the [illegible] Kennedy to the Victory [illegible] S C Shaw to the Vivid addl. C H [illegible] to the E N E [illegible] M B to the Victory addl. A Sulh [illegible] H [illegible] Walton to [illegible] S [illegible] K B Kerr to the Vivid addl. T J [illegible] Turnbull addl. [illegible] Clough to R N Division W D Pearman to the [illegible] H [illegible] to the Vernon addl. G N Mullen to the Pembroke, addl. E C [illegible] B [illegible] Nutting [illegible] H West to Dunkirk R N Medical Depot. D A [illegible] M B Chatham Hospital S M [illegible] M B to Haslar Hospital T D Byrd to Plymouth Hospital B J Mortlock M B [illegible] the Dunraven E M Moseley to the Wolfhound C V [illegible] the Sir Thomas [illegible] J Scollar M B to Portsmouth Barracks J T Haynes to the Troubroke addl. T P Johnson M B to the City of London G Williams M B to the Vivid addl. F H Ar[illegible] to the Helpful R Gerney to the Glory [illegible] P Pace M B [illegible] addl. A P Robb to the Hermes A Tuth M B to the Victory addl. A I Stratton M B to the Vivid addl. [illegible] H B Hogg to the Vivid addl. W J Anderson M B to the Vernon J B [illegible] the Apollo L D Fullerton to the Dragon J J Keally to the Victory addl. H S Labby to H M Yacht Grannagh B T Brewitt to the Crescent addl. W S Rambo to the Potomac H H Collett M B [illegible] to the R A F A L Stratton M B to Cranton Naval Base J Scotter M B to the Amethyst addl. J J [illegible] M B to Portsmouth Dockyard C R T Thomson to the Indefatigable C D F Houghton to H H [illegible] Haslar Hospital H V Edwards addl. V S Green to Chatham Hospital A D Wall N [illegible] M Greenstreet C E Cobb E S Corrigan H Morrison M B, to Plymouth Hospital [illegible] R Ross to the Rama F M Moseley to the Wolfhound G L Attwater to the Medical Transport Hall H M Dodd M B—M V to the Peashooter addl. R Tollock H [illegible] Canada E E Harness to the Dublin D S Mackenzie M B to the Vernon,

[illegible]

Answers

Depuis [illegible] Engage [illegible] recruiting [illegible]

Fled [illegible] the Victory add [illegible] MD F R C S [illegible] Hospital [illegible] W R Trail [illegible] Vivid add [illegible] the Vivid add [illegible] Dunsen to the [illegible] R est to the Warrior [illegible] to Osborne [illegible] the Pembroke add [illegible] R N Depot Inverness [illegible] W [illegible] Ch [illegible] to the [illegible] Aust [illegible] the Ark add [illegible] Skaw B A [illegible] W Jeeks [illegible] Mahon B A [illegible] W [illegible] Dawson [illegible] to the Pembroke add [illegible] tors H E G [illegible] the Inflexible add [illegible] Staff Surg [illegible] M Riggall to Hesper Hospital [illegible] Spalding to the Inflexible [illegible] J C [illegible] M D to the [illegible] Roberts M B and R Hemsworth to the Pembroke add [illegible] Brabham [illegible] Tate J L Barford to the [illegible] Cruser M D B A to the Fenchurch [illegible] Kingcot D S O [illegible] the Victory add [illegible] Mangan D S O [illegible] to the Pembroke add [illegible] to the Vivid add [illegible] Bent M B [illegible] the Inflexible add [illegible] Mad M L to the Sapphire [illegible] Dawber to the Victor add [illegible] Hedgland [illegible] Bass J P Bent [illegible] to the Vengeance [illegible] M B to the Hyacinth [illegible] to the Clor [illegible] Surg [illegible] the Indus [illegible] R Sharpe M B [illegible] the Rail [illegible] W M [illegible] the Hyacinth [illegible] R M R Thursfield B A to the Vivid add [illegible] Staff Surg [illegible] D N R R J Wallace M A O M B [illegible] to the Hawke [illegible] Surg [illegible] R N R A H Cook to the Hospital Ship Karnissa [illegible] Wheeler to the Victor add [illegible] T MacGuat M B to the Vivid add [illegible] W E Hunter to the Victory [illegible] Temp Surg [illegible] T J Kelleher M D [illegible] P [illegible] add [illegible] the Cornwall [illegible] Bennell to the Royal Hospital [illegible] G N [illegible] the Victory [illegible] W [illegible] Chatham Hospital W H [illegible] to the Vivid add [illegible] to Hamilton the Hospital [illegible] Bailey the Victory add [illegible] to the Victory [illegible] Hearne M B [illegible] Tony add [illegible] A Cook M B [illegible] the Victory [illegible] Gosling M B [illegible] Hospital W M [illegible] R C W [illegible] to the Inflexible add A L S [illegible] M B [illegible] the Victory add [illegible] Fairbairn [illegible] the Vivid [illegible] R A [illegible] the Inflexible [illegible] Haslar Hospital S W [illegible] the Victory add S J M [illegible] M B [illegible] V T [illegible] M B to the Hospital [illegible] Swan [illegible] M B [illegible] Gray M B [illegible] Hudson [illegible] M B [illegible] the Pembroke add [illegible] Bailey to the Lyme [illegible] the Vivid add [illegible] R W N [illegible] the Inflexible add [illegible] B L Floyd M B to the Fagle [illegible] R Warburton [illegible] the Victory add [illegible] Stephens the Victory add [illegible] D Arthur M D to the [illegible] to Chatham Hospital [illegible] Victory [illegible] S William to the Powerful [illegible] the Victory [illegible] Tamarisk P C Weed to the Tartar [illegible] Stagg M B [illegible] to the Cornwall [illegible] Warburton [illegible] F J R Cox M B to the [illegible] J Meek S Nichol M B to the [illegible] Victory add J S L Roberts to the Victory [illegible] M B to the Sapper W D Lodge M B [illegible] M D to R N Hospital Peel [illegible] Victory add [illegible] C H Savery to Plymouth Hospital J L Irvine M B [illegible] M B to the Crescent add [illegible] the Victory add D S Meachright M B [illegible]

Appendix

[illegible] M P [illegible] Lodge M P [illegible] R N Beck [illegible] Shell [illegible] C Bass [illegible] Antony [illegible] P J Kell [illegible] Y Avery addl W M Lael [illegible] Hooker H [illegible] S Ward M B [illegible] R A [illegible] Hooker H [illegible] S A [illegible] M B [illegible] M Mell [illegible] M B [illegible] addl I A Hopson [illegible] Bartlett [illegible] M B to the Aiga

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A GENERAL APPEAL ON BEHALF OF THE WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND

This Fund was started in 1916 to help members of the medical profession who find themselves in temporary financial difficulties as the direct consequence of having joined the Medical Service of the Navy or Army during the War.

The War has told separately heavily on married men since most of them become casualties as soon as they leave home. It has falling on all society on those belonging to the Territorial Forces who were mobilized directly War was declared and had no time to make adequate arrangements for the carrying on of their practices during their absence. All sides have had to face a severe fall in income even where supplemented by Pay. Since 1915, while many expenses such as rent, insurance premiums, taxes, household expenses and education have had to be met.

Grants of a bonus scale will be needed to enable them to make a fresh start in and practice and to defray current expenses for the first six or twelve months. It is calculated that at least £30,000 must be raised. Towards this amount the profession has already contributed over £16,000 and an appeal is now being made to a wider circle to complete the sum required.

It is believed that many will respond to this appeal partly from a sense of indebtedness to the medical profession for services rendered to them and to the members of their families, and partly from a warm appreciation of the loyal response of the profession to the call of the nation in its hour of great need.

Every application is personally investigated before a grant is made, and the entire Fund will probably be expended within two years after the end of the War.

The Fund is administered by an Executive Committee and the money is temporarily invested in War Loan and National War Bonds.

The Hon. Auditors are Messrs. Deloitte, Plender, Griffiths and Company.

SAMUEL WEST, M.B., *President of the Royal Medical Benevolent Fund*
CHARTERIS SAM, Sir, Colonel, V.M.S., *Hon. Treasurer*
G. NEWMAN, *Hon. Secretary*
ARTHUR FRANCIS FOULD, Lieut.-Col., R.A.M.C.(T.), *Chairman of the War Emergency Fund Committee*

March 1918.

General Committee nominated at a Meeting of Members of the Profession, held October 30, 1917, to further the Objects of the War Emergency Fund.

Those marked * are Members of the Executive Committee.

Col. T. R. Acland
Sir F. Clifford Albutt, K.C.B.
Col. John Adams.
Lt.-Col. Sir C. A. Ballance, C.M.G.
Lt.-Col. G. Banting.
Sir Thomas Barlow, Bt.
Lieut.-Col. Sir James Barr.
Lt.-Col. Bidgood Banks.
Dr. S. Bond (Hull).
Mr. George Bidwell.
Lieut.-Col. R. A. Bolam.
Major-Gen. Sir Anthony Bowlby.
Major-Gen. Sir J. Bate Bradford.
British Medical Journal, Editor of the.
Col. H. B. H. Bruce Porter, C.M.G.
Col. Paul Bush.
Dr. C. Bullin.
Dr. H. J. Campbell.
Dr. H. J. Corlett.
Col. A. Cutless.
Surg.-Gen. Sir William Chevne, Bt., K.C.M.P.
Sir William Selby Church, Bt., K.C.B.
Mr. James Clarke.
Lieut.-Col. T. Mitchell Clarke.
Lieut.-Col. William Collier.
Col. H. Davy.
Major-Gen. Sir J. Bedford Dixson, K.C.V.O.
Sir Dyce Duckworth, Bt.
Dr. Barton Fanning.
Lieut.-Col. Harry Fenwick.
Col. Sir E. Fergusson.
*Col. Sir James Galloway.
Sir Rickman Godlee, Bt.
Major-Gen. T. H. Goodwin, C.M.G., D.S.O., Director-General A.M.S.
*Lieut.-Col. Sir Alfred Keogh.
Lieut.-Col. R.C.V.O.
Major W. J. Gunn.
*Dr. Leonard G. Guthrie.
Dr. G. L. Harlip.
Major-Gen. Sir W. Boyd Horningham.
Col. Sir Robert Jones.
Lieut.-Gen. Sir Alfred Keogh, G.C.B., A.M.S.
Lieut.-Col. J. Paul Little.
Col. Sir Wm. Arbuthnot Lane, Bt.
Mr. Cecil Lankester.
Dr. A. Lyndon.
Sir Donald MacAlister.

[illegible] A Maclean [illegible] Lol Willis [illegible]
Major E Maitland Major [illegible]
Major Gen Sir G H [illegible] Lieut Col [illegible]
[illegible] C M G [illegible]
Royal College [illegible] Mat [illegible]
Medical Faculty [illegible] Surgeon [illegible]
[illegible] RN [illegible]
Mr J H Moog [illegible] [illegible]
Col C Mure [illegible] [illegible] C B E
Sir Malcolm [illegible] [illegible]
Col J R Mo[illegible] [illegible]
Major [illegible] Col W [illegible]
Mount [illegible] [illegible] C B [illegible]
[illegible] W H [illegible] [illegible]
R N Director [illegible] R N [illegible] Royal [illegible]
Medical Service [illegible] [illegible]
Col Sir Wilfrid [illegible] [illegible]

Contributions [illegible] *Chaucle Street Cote* [illegible] Square W 1

Some of the Cases that have been assisted

Captain R A M C (T) with a good complete family owing to his death in the service of War [illegible] the practice has now been entirely lost. He has a wife and three children. He was recently in 1915 and [illegible] granted £60 granted toward household expenses.

Captain R A M C, aged 41 He [illegible] very [illegible] £60 [illegible] Captain [illegible] the War was worth £700 a year He has a wife and six children [illegible] granted toward [illegible] household expenses.

Captain R A M C, aged 30 Served in two campaigns in the R A M C He has [illegible] in different [illegible] to practise [illegible]

Surgeon R N, aged 2 With one [illegible] child He [illegible] broke down while on duty in the North Sea He has been invalided out of the service [illegible]

Captain R A M C, aged 34 Called up at the [illegible] of the War [illegible] £30 granted to pay his [illegible]

Major R A M C (T) [illegible] £30 granted to pay his [illegible]

A captain [illegible] £30 granted [illegible]

A captain [illegible] £30 granted [illegible]

A captain [illegible] £30 [illegible]

[illegible]

Donations to January 31 1918

[illegible]

[illegible]

[illegible]

[illegible]

ADMIRALTY ORDERS ISSUED FROM JUNE 1 1918, TO SEPTEMBER 15, 1918

(Not the more important Orders pertaining directly to the duties of Medical Officers, but of a substantial character included.)

1859—Surgeon Probationers, R N C V R

(C W 25037—6 6 1918.)

It has been decided that Surgeon Probationers, R N C V R, have been instituted in the Executive Branch of the Royal Naval Reserve, and that Sub Lieutenant R N R V R, Medical Student, should be added to Medical Students attached to leading Medical School, who are not Probationers.

(This Order will be included in the July M O s.)

1860—Olive Oil for Medicinal Purposes.

(M D G 7403 18—11 6 1918.)

Owing to the difficulty in obtaining supplies, it is necessary that the strictest economy should be exercised in the use of olive oil and the instructions in which this article is a component part of prescriptions to be reduced to the absolute minimum necessary for essential purposes.

(This Order will be included in the July M O s.)

2017—Sick Men—"Attending Lists" (S 71) and "Light Duty" (S 71b) Cards

(M D G 8178 18—20 6 1918.)

The cards which are at present in use in the General Depots are also in future to be used in Training Establishments, Depot Ships of Torpedo Boats, Destroyers and Submarines and Tender (Maintenance). A demand for sufficient cards to last for six months should be made through the usual channels. As soon as they are received the cards should be brought into use and the present form of other similar cards at present in use. They are for use in Stationary Ships and Depot Ships with large complements and in Shore Establishments to such as Shetland, Dunfermline, Vernon, Victory, &c. When the present stock of cards in hand is exhausted a revised report will be made and the cards so amended are to be used by the Establishments previously enumerated. In the meantime where necessary, the cards should be amended in manuscript. "Light Duty" being substituted for "Excused Duty" on the card marked S 71b and "Establishment" for "R N Barracks" on both cards.

(This Order will be included in the July M O s.)

2035—Eyesight and Colour Vision Tests—Appliances

(M D G 8180 18—20 6 1918.)

In order that the necessary tests mentioned in M D 1600 18 may be carried out, it has been decided to supply one Maddox Rod test and one Holmgren Green Bead test to each Flagship. Arrangements are to be made locally for these tests to be lent to the Medical Officers of other ships when required.

(M D 1600 18.)

(This Order will be included in the July M O s.)

2167—Medical Officer D A M S

(D T D 27 6 1918.)

Fleet Surgeon M Knapp R N has been appointed for duty (administrative) in succession with D A M S, at rank.

All correspondence for this Officer should be addressed to the Medical Officer D A M S, 22a, Tottenham Court Road, London, W 1.

Telegrams should be sent to "Paydaxis, Ox London" or "Trade D A Admiralty" and should begin "For Medical Officer."

His telephone numbers are Museum 4064, 4065 Extension 7.

*2169—Medical Officers in Charge of H M Ships employed in carrying Troops—Retaining Fees

(N L 2481/18—11 7 1918.)

Attention has been called to the payment of retaining fees to Medical Officers in charge of H M Ships employed in carrying troops, and it is assumed that assistance for members of Allied Forces travelling between the United Kingdom and U S A.

Permission cannot be given for the payment of such fees by Medical Officers as the Article Instructions permit it to be temporary.

(This Order will be included in the August M O s.)

2205.—W.R.N.S. Medical Returns of Sickness.

(M.D.G. 2935/18.—4/7/1918.)

[illegible] regard to sickness of ranks and rating of the W.R.N.S. [illegible] Report of Health (M.O. 149/16) and Medical Officer's Journal [illegible] no of guardsmen sick [illegible] is necessary.

[illegible] quarterly tabulated return (M.O. 1/8) for the W.R.N.S. ought to be rendered.

(This Order will be included in the August M.O.s.)

2670.—Dental Syringes and Local Anæsthetics for H.M. Ships.

(M.D.G. 2197/18.—27/7/1918.)

In [illegible] the Order issued under G.M.O. 281/18, paragraph 11, the following have been added [illegible] Medical cases to be allowed in the Service Allowance:—

	Number allowed		
	N	S	S
Dental syringe	1	1	1
Ethyl chloride, local anæsthetic	1	1	[illegible]
Novocaine tablets	[illegible]	2	1

[illegible] are available and Medical Officers are to forward demands [illegible] ships in accordance therewith.

(This Order will be included in the Sept. issue M.O.s.)

2599.—Health—Weekly Report.

(M.D.G. 2855/18.—8/8/1918.)

[illegible] Medical Officer [illegible] Sick Quarters Medical [illegible] Medical Officer [illegible] report in the general [illegible] of Officers [illegible] following form:—

(1) Table—For week ending

Name of vessel	(1) Average daily No victualled	(2) Total day strength	(3) Average No sick daily	(4) Percentage sick daily

Note.—Column (3) is obtained by dividing the total sickness (i.e. the number of days in the period [illegible]) Column (4) is obtained by multiplying column (3) by 100 and dividing [illegible] the number victualled (1). Do not include cases of cases which are hospital [illegible] not included in these calculations.

(2) Percentage sick daily of the total strength of the Fleet or Squadron.

(3) Fresh admissions during the week of all [illegible] and [illegible] diseases (malaria, enteric fever, enteric, epidemic influenza, etc.).

(4) Fresh admissions during the week of venereal diseases (in order [illegible] diseases [illegible]).

(5) Total days sickness during the week from venereal disease (including all complications and treatment). [illegible] increase in hospitalisation [illegible].

(M.O.s 149/16 and 110/13 are cancelled.)

2600.—Infectious Diseases—Notification.

(N.M.D.G. 2755.—8/8/1918.)

All cases of notifiable infectious diseases (including tuberculosis) are to be reported by the Medical Officers in Charge of Naval Hospitals, R.N. Sick Quarters, Marine Barracks, Camps and Naval Dockyards in the United Kingdom to the Medical Officer of Health of the district within which the place of residence of the patient is situated.

*2672.—Medical History Sheets for Mercantile Marine Ratings

(M D G 10113/28—1 9 1918.)

A Medical History Sheet (M 1 0) for all Mercantile Marine Ratings on discharged or invalided [illegible] shall be sent to the Medical Director-General giving details of sickness at date of discharge and the cause of discharge when it is definitely constitutional, aggravated or [illegible] to the service.

Attention is called to M O s 3462/1 and 4210/1.

(M O s 84 3/6 and 4210/1.)

(This Order will be included in the September M O s.)

2729.—Surgeon Probationers, R N V R

(C W 31701.—1 9 1918.)

Surgeon Probationers on Destroyers

[illegible] to bear in mind the intention of Surgeon Probationers joining [illegible] be decided that when Destroyers and their bases, the Surgeon Probationers [illegible] hospital-ships may be available returning to their vessels until when they [illegible]

[illegible] hospital-ship, they are to be treated as regularly serving [illegible] M O 430/16 for officers serving vessels stationed on the Central [illegible] pay is administered centrally.

Extension of Time

[illegible] be granted reasonable leave not exceeding three weeks [illegible] the Admiralty being informed in each case [illegible]

[illegible] is required, resignation will be necessary. No relief [illegible]

Invalidation

[illegible] R N V R [illegible] completely examined the [illegible] the short [illegible] will be invalided [illegible]

[illegible] be submitted to the Commanding Officer at least [illegible]

[illegible] completely —

[illegible] a Temporary Surgeon R N, the qualified [illegible]

[illegible] Officer serving the outlet and [illegible]

[illegible] School during the earliest date at which [illegible]

[illegible] of the Surgeon [illegible] hospital [illegible] demobilisation [illegible] war [illegible] provided the base [illegible] Naval Service or equalising [illegible]

[illegible] Surgeon Probationers will [illegible] Training [illegible] Surgeon Probationer [illegible]

[illegible] be consulted [illegible]

(M O s 2509/17 8762/17 1343/18 and 1518/18 are cancelled.)

2724.—Fumes from Stoves—Danger

(N T 37301.—1 9 1918.)

[illegible] fumes from stoves [illegible] and reported to the [illegible] should be investigated when stoves are [illegible] amount of ventilation have to be [illegible] are to be left partly or wholly open and the larger to the [illegible] the Lessing extinguished [illegible] be considered as dangerous unless it is [illegible] been [illegible] before screw deck [illegible] vessel [illegible] stoves in closed and unventilated compartments [illegible]

(M O s 1434/16 is cancelled.)

2753.—Cerebrospinal Meningitis. Pneumococcus. Reports.

(N. 1974.)

Disposal of

[illegible]

(d) [illegible]

Total [illegible]

Subjoin [illegible]

[illegible]

(c) Th[illegible]

(e) If [illegible]

[illegible]

(f) Th[illegible]

[illegible]

(1) C[illegible]

[illegible]

(2) C[illegible]

[illegible]

(3) C[illegible]

[illegible]

(4) [illegible]

[illegible]

(5) [illegible]

(6) [illegible]

(7) [illegible]

(8) [illegible]

(9) [illegible]

(10) [illegible]

(11) [illegible]

(12) [illegible]

(13) [illegible]

(14) [illegible]

(15) [illegible]

(16) [illegible]

(17) [illegible]

(18) [illegible]

(D) [illegible]

(e) [illegible] days [illegible] proved

(f) [illegible] results are [illegible] should be

(g) [illegible] Prof Dalliel [illegible]

(h) [illegible] Animal an

[illegible]

[illegible] M

[illegible]

[illegible] above [illegible] be [illegible] or his small [illegible] occupants [illegible] considered [illegible] [illegible] occupants of [illegible] which [illegible] cure [illegible] d [illegible] isolated

(i) [illegible] Chief for Consequential Managing on [illegible] being [illegible] fully provided [illegible]

(k) There [illegible] to deal [illegible] ports [illegible] have [illegible] being drafted [illegible] part that is [illegible] and [illegible] rights

(l) Drafts of [illegible] leaving and [illegible] again to be [illegible] Medical [illegible] ports [illegible]

(m) Drafts [illegible] before being [illegible] leaving periods before [illegible] before leaving

(n) Drafts [illegible] isolated before being sent away

(M H 8 145/15 699/15 88/16 and 1111 [illegible] mailed)
(This Order will be included in the October M O s)

2779 —Larbert, R N Hospital—Telegraphic Address

(M 17501 —2 8 1918)

Mr [illegible] Larbert has been registered as the telegraphic address of the Stirling General [illegible] Larbert

2781 —Medical Officer D A W S —Telegraphic Address.

(M 26811 —2 8 1918)

Medicinis Ox London has been registered as the telegraphic address of the Medical [illegible] A W S 225 Tottenham Court Road London W 1

2927 —Navy Pattern Blood Capsules

(M D G 5210/18 —5 9 1918)

[illegible] has decided to adopt a standard pattern glass tube for collecting blood specimens for [illegible] H M Ships bearing a Medical Officer This will be supplied in boxes of thirty-six [illegible] which will contain a printed leaflet giving full directions as to use

[illegible] have been added to the Scale of Medicines &c allowed for the Service [illegible] following proportions —

No 1 Medicine Chest	144 tubes
No [illegible] Medicine Chest	72
No 3 Medicine Chest	36

Supplies will be available shortly and Medical Officers should demand on their Naval [illegible] Depots to replenish their stores to the scale allowed

(This Order will be included in the October M O s)

2947 —Officers' Eyesight—Examination.

(C W 26608 —1 9 1918.)

[illegible] have been brought to notice of officers suffering from defective vision who have not taken [illegible] opportunity of being properly examined until the defect has become serious enough to [illegible] in official performance of their duties owing to want of efficient remedies For

[illegible]

[illegible]

[illegible]

[illegible]

2367.—Nargol and Calomel Outfits

(Mutiny, 1918 to—July, 1918.)

[illegible]

OBITUARY.

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